This document gives pertinent information concerning the reissuance of the Virginia Pollutant Discharge Elimination System (VPDES) Permit listed below. This permit is being processed as a Major, Industrial permit. The discharge results from the operation of an existing 2046 Mega Watt (MW) nuclear power station, generating electrical power from the fission of nuclear material. This permit action consists of updating the proposed effluent limits to reflect the current Virginia Water Quality Standards (WQS), effective January 6, 2011, and updating permit language as appropriate. The operation of the proposed Unit 3 is not addressed in this permit action. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260 et seq.

1.	Facility Name and Mailing Address:	Dominion – North Anna Power Station 5000 Dominion Boulevard Glen Allen, VA 23060	SIC Code :	4911 – Electric Services
	Facility Location:	1022 Haley Drive Mineral, VA 23117	County:	Louisa
	Facility Contact Name:	Mr. Randy Markey	Telephone Number:	(540) 894-2856
2.	Permit No.:	VA0052451	Expiration Date of Previous Permit:	October 24, 2012
	Other VPDES Permits:	VAR10-10-101574 – Storm Water Construction		
	Other Permits:	10-1256 – VWP (Unit 3, Part I) 10-1496 – VWP (Unit 3, Part II) 10-2001 – VWP (Unit 3, Part III) 40726 – Air Registration Number VAD065376279 – Hazardous Waste		
	E2/E3/E4 Status:	Not Applicable		
3.	Owner Name:	Virginia Electric and Power Company		
	Owner Contact/Title:	Ms. Cathy C. Taylor / Director, Electric Environmental Services	Telephone Number:	(804) 273-2929
4.	Application Complete Date:	April 27, 2012		
	Permit Drafted By:	Susan Mackert	Date Drafted:	October 17, 2012
	Draft Permit Reviewed By:	Alison Thompson	Date Reviewed:	November 9, 2012
	WPM Review By:	Bryant Thomas	Date Reviewed:	December 6, 2012
	Public Comment Period :	Start Date: February 7, 2014	End Date:	March 10, 2014

5a. Outfalls to Lake Anna

Outfall:	**001 (Industrial Process Wastewater)**	Waterbody ID:	VAN-F07L
Receiving Stream Name :	Lake Anna	River Mile:	35.09
Stream Basin:	York River	Subbasin:	York
Stream Code:	8-NAR	Stream Class:	III
Section:	3	Special Standards:	None
Outfall:	**009 (Industrial Process Wastewater)**	Waterbody ID:	VAN-F07L
Receiving Stream Name :	Lake Anna	River Mile:	44.50
Stream Basin:	York River	Subbasin:	York
Stream Code:	8-NAR	Stream Class:	III
Section:	3	Special Standards:	None

5a. Outfalls to Lake Anna (Continued):

Outfall:	**013 (Industrial Process Wastewater)**	Waterbody ID:	VAN-F07L
Receiving Stream Name :	Lake Anna	River Mile:	44.45
Stream Basin:	York River	Subbasin:	York
Stream Code:	8-NAR	Stream Class:	III
Section:	3	Special Standards:	None

Outfall:	**014 (Storm Water)**	Waterbody ID:	VAN-F07L
Receiving Stream Name :	Lake Anna	River Mile:	44.49
Stream Basin:	York River	Subbasin:	York
Stream Code:	8-NAR	Stream Class:	III
Section:	3	Special Standards:	None

Outfall:	**016 (Industrial Process Wastewater)**	Waterbody ID:	VAN-F07L
Receiving Stream Name :	Lake Anna	River Mile:	44.45
Stream Basin:	York River	Subbasin:	York
Stream Code:	8-NAR	Stream Class:	III
Section:	3	Special Standards:	None

Outfall:	**020 (Industrial Process Wastewater)**	Waterbody ID:	VAN-F07L
Receiving Stream Name :	Lake Anna	River Mile:	44.45
Stream Basin:	York River	Subbasin:	York
Stream Code:	8-NAR	Stream Class:	III
Section:	3	Special Standards:	None

Outfall:	**021 (Industrial Process Wastewater)**	Waterbody ID:	VAN-F07L
Receiving Stream Name :	Lake Anna	River Mile:	44.45
Stream Basin:	York River	Subbasin:	York
Stream Code:	8-NAR	Stream Class:	III
Section:	3	Special Standards:	None

Outfall:	**022 (Storm Water)**	Waterbody ID:	VAN-F07L
Receiving Stream Name :	Lake Anna	River Mile:	44.62
Stream Basin:	York River	Subbasin:	York
Stream Code:	8-NAR	Stream Class:	III
Section:	3	Special Standards:	None

Outfall:	**024 (Storm Water)**	Waterbody ID:	VAN-F07L
Receiving Stream Name :	Lake Anna	River Mile:	44.56
Stream Basin:	York River	Subbasin:	York
Stream Code:	8-NAR	Stream Class:	III
Section:	3	Special Standards:	None

5a. Outfalls to Lake Anna (Continued):

Outfall:	**028 (Industrial Process Wastewater)***	Waterbody ID:	VAN-F07L
Receiving Stream Name :	Lake Anna	River Mile:	44.09
Stream Basin:	York River	Subbasin:	York
Stream Code:	8-NAR	Stream Class:	III
Section:	3	Special Standards:	None

Critical Flow Information Applicable to all Lake Anna Outfalls:

7Q10 Low Flow:	NA (discharge to lake)	7Q10 High Flow:	NA (discharge to lake)
1Q10 Low Flow:	NA (discharge to lake)	1Q10 High Flow:	NA (discharge to lake)
30Q10 Low Flow:	NA (discharge to lake)	30Q10 High Flow:	NA (discharge to lake)
Harmonic Mean Flow:	NA (discharge to lake)	30Q5 Flow:	NA (discharge to lake)

5b. Internal Outfalls to the Waste Heat Treatment Facility:

Internal Outfall:	**025 (Storm Water)**
Receiving Stream Name :	Waste Heat Treatment Facility to Lake Anna via Outfall 001
Internal Outfall:	**027 (Storm Water)***
Receiving Stream Name :	Waste Heat Treatment Facility to Lake Anna via Outfall 001
Internal Outfall:	**101 (Industrial Process Wastewater)**
Receiving Stream Name :	Discharge Canal to Waste Heat Treatment Facility to Lake Anna via Outfall 001
Internal Outfall:	**103 (Industrial Process Wastewater)**
Receiving Stream Name :	Discharge Canal to Waste Heat Treatment Facility to Lake Anna via Outfall 001
Internal Outfall:	**104 (Industrial Process Wastewater)**
Receiving Stream Name :	Discharge Canal to Waste Heat Treatment Facility to Lake Anna via Outfall 001
Internal Outfall:	**105 (Industrial Process Wastewater)**
Receiving Stream Name :	Discharge Canal to Waste Heat Treatment Facility to Lake Anna via Outfall 001
Internal Outfall:	**107 (Industrial Process Wastewater)**
Receiving Stream Name :	Discharge Canal to Waste Heat Treatment Facility to Lake Anna via Outfall 001
Internal Outfall:	**108 (Industrial Process Wastewater)**
Receiving Stream Name :	Discharge Canal to Waste Heat Treatment Facility to Lake Anna via Outfall 001
Internal Outfall:	**109 (Industrial Process Wastewater)**
Receiving Stream Name :	Discharge Canal to Waste Heat Treatment Facility to Lake Anna via Outfall 001
Internal Outfall:	**110 (Industrial Process Wastewater)**
Receiving Stream Name :	Discharge Canal to Waste Heat Treatment Facility to Lake Anna via Outfall 001
Internal Outfall:	**111 (Municipal Wastewater)**
Receiving Stream Name :	Discharge Canal to Waste Heat Treatment Facility to Lake Anna via Outfall 001

5b. Internal Outfalls to the Waste Heat Treatment Facility (Continued):

Internal Outfall: **112 (Industrial Process Wastewater)**
Receiving Stream Name : Discharge Canal to Waste Heat Treatment Facility to Lake Anna via Outfall 001

Internal Outfall: **113 (Industrial Process Wastewater)**
Receiving Stream Name : Discharge Canal to Waste Heat Treatment Facility to Lake Anna via Outfall 001

Internal Outfall: **114 (Industrial Process Wastewater)**
Receiving Stream Name : Discharge Canal to Waste Heat Treatment Facility to Lake Anna via Outfall 001

Internal Outfall: **115 (Industrial Process Wastewater)**
Receiving Stream Name : Discharge Canal to Waste Heat Treatment Facility to Lake Anna via Outfall 001

Internal Outfall: **116 (Industrial Process Wastewater)***
Receiving Stream Name : Discharge Canal to Waste Heat Treatment Facility to Lake Anna via Outfall 001

Internal Outfall: **117 (Industrial Process Wastewater)***
Receiving Stream Name : Discharge Canal to Waste Heat Treatment Facility to Lake Anna via Outfall 001

Internal Outfall: **118 (Industrial Process Wastewater)***
Receiving Stream Name : Discharge Canal to Waste Heat Treatment Facility to Lake Anna via Outfall 001

*Outfall 027, Outfall 028, Internal Outfall 116, Internal Outfall 117, and Internal Outfall 118 were added to the permit subsequent to the initial permit application. Please see Section 10 – Table 3, Section 17.c.8, Section 17.d.14, Section 17.d.15, and Section 17.d.16 of the Fact Sheet for additional information.

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

✓	State Water Control Law	✓	EPA Guidelines (40 CFR Part 133)*
✓	Clean Water Act	✓	EPA Guidelines (40 CFR Part 423)*
✓	VPDES Permit Regulation	✓	Water Quality Standards
✓	EPA NPDES Regulation	✓	Other (SCAT Regulations - 9VAC25-790 et seq.)*

*40 CFR Part 133 – Secondary Treatment Standards (Applicable to Outfall 111 only)

*40 CFR Part 423 – Steam Electric Power Generating

* SCAT Regulations – Sewage Collection and Treatment Regulations

7. Licensed Operator Requirements: Class IV (Applicable to Outfall 111 only)

8. Reliability Class: Class II (Applicable to Outfall 111 only)

9. Permit Characterization:

✓	Private	✓	Effluent Limited		Possible Interstate Effect
	Federal	✓	Water Quality Limited		Compliance Schedule Required
	State	✓	Whole Effluent Toxicity Program Required		Interim Limits in Permit
✓	PVOTW*		Pretreatment Program Required		Interim Limits in Other Document

*PVOTW = Privately Owned Treatment Works

10. Wastewater Sources and Treatment Description:

The Dominion – North Anna Power Station (Station) is an existing nuclear power plant. The facility utilizes two Westinghouse pressurized water reactors (Units 1 and 2) generating a combined 2046 MW total gross. Water needed for unit operations is withdrawn from Lake Anna. Units 1 and 2 each have their own intake equipment located within the same structure.

TABLE 1 – Generation Units

Generating Unit	Fuel Source	MW Generation
Unit 1	Uranium	1023 MW
Unit 2	Uranium	1023 MW

There are nine point source discharge locations to Lake Anna; three of which are storm water only. The primary discharge point to Lake Anna is from Outfall 001. Outfall 001 discharges from the Waste Heat Treatment Facility (WHTF) at Dike 3. Internal outfalls from the Station are released to the WHTF at two locations: the primary discharge canal and storm water Outfall 025. Additional information on all North Anna Power Station discharges is provided below in Tables 2 and 3. See Section 21 of the Fact Sheet for additional discussion on the WHTF.

See Attachment 1 for the NPDES Permit Rating Worksheet.
See Attachment 2 for a facility schematic/diagram.
See Attachment 3 for an outfall location map.

TABLE 2 – Industrial Process and Municipal Wastewater Outfall Descriptions

Outfall Number	Discharge Sources	Treatment	Average Flow	Latitude and Longitude
001	Waste Heat Treatment Facility (WHTF)*	WHTF	2335.8 MGD	38° 00′ 30.2″ N 77° 43′ 43″ W
	*Sources include internal Outfalls 101, 103, 104, 105, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, and 118 which discharge to the WHTF via the cooling water discharge canal and storm water Outfall 025 which discharges directly to the WHTF.			
009	Settling Pond*	Sedimentation	0.576 MGD	38° 03′ 43.6″ N 77° 47′ 31″ W
	*Sources include groundwater, storm water, reverse osmosis unit backwash, bearing cooling tower water during maintenance activities, and ionics emergency shower wash post neutralization in holding tank.			
013	Turbine Building Sumps - #1 and #2*	None	Intermittent[1]	38° 03′ 43.6″ N 77° 47′ 24.4″ W
	*Sources include storm water, plant condensers, bearing cooling water, and miscellaneous discharges of purified or raw lake water from various infrequent plant maintenance activities. [1]The discharge from Outfall 013 is intermittent with an average flow of 0.324 MGD for the 2008 – 2010 time period.			
016	Intake Screen Wash Water	None	3.744 MGD	38° 03′ 43.6″ N 77° 47′ 24.4″ W

TABLE 2 – Industrial Process and Municipal Wastewater Outfall Descriptions (Continued)

Outfall Number	Discharge Sources	Treatment	Average Flow	Latitude and Longitude
020	Reverse Osmosis Reject	None	0.216 MGD	38° 03′ 43.6″ N 77° 47′ 24.4″ W
021	Reverse Osmosis Drain Line	None	Intermittent[1]	38° 03′ 43.6″ N 77° 47′ 24.4″ W
	[1]The discharge from Outfall 021 is intermittent with no discharge during the 2008 – 2010 time period.			
028	Beyond Design Basis Pumps*	None	0.014 MGD	38° 03′ 39.2″ N 77° 46′ 57.3″ W
	* Outfall 028 was added to the permit subsequent to the initial application submittal. Please see Section 17.c.8 of the Fact Sheet.			
101 (Internal)	Condenser Cooling Water	WHTF	1838.8 MGD	38° 03′ 5.8″ N 77° 47′ 3.1″ W
103 (Internal)	Process Wastewater Clarifier*	Ion Exchange	0.312 MGD	38° 03′ 5.8″ N 77° 47′ 3.1″ W
	*Sources include flow from the liquid radioactive waste management system, steam generator blowdown, package boiler blowdown, mat sump system, ion exchange waste, and intermittent service water system high capacity blowdown.			
104 (Internal)	Turbine Building Sumps 1, 2, and 3*	Oil-Water Separator, Neutralization	0.288 MGD	38° 03′ 5.8″ N 77° 47′ 3.1″ W
	*Sources include storm water, fire water system drain lines, miscellaneous discharges of purified or raw lake water from various infrequent plant maintenance activities, chiller water, service water, condensate storage tanks, above ground storage tank containment sump, demineralizer sump, plant condensers, bearing cooling water, and temporary package boiler blowdown.			
105 (Internal)	Bearing Cooling Tower Blowdown *	None	0.084 MGD	38° 03′ 5.8″ N 77° 47′ 3.1″ W
	*Sources include continuous blowdown and intermittent lake-to-lake operations.			
107 (Internal)	Bearing Cooling Tower Lake to Lake Operations*	None	Intermittent[1]	38° 03′ 5.8″ N 77° 47′ 3.1″ W
	*Sources include continuous blowdown, intermittent lake-to-lake operations, and strainer blowdown. [1]The discharge from Outfall 107 is intermittent with no discharge during the 2008 – 2010 time period.			
108 (Internal)	Service Water Overflow*	None	Intermittent[1]	38° 03′ 5.8″ N 77° 47′ 3.1″ W
	*Sources include batch blowdown overflow, straight-through cooling water, and header maintenance. [1]The discharge from Outfall 108 is intermittent with an average flow of 0.15 MGD for the 2008 – 2010 time period.			

TABLE 2 – Industrial Process and Municipal Wastewater Outfall Descriptions (Continued)

Outfall Number	Discharge Sources	Treatment	Average Flow	Latitude and Longitude
109 (Internal)	Hot Well Drain – Unit 1*	None	Intermittent[1]	38° 03′ 5.8″ N 77° 47′ 3.1″ W
	*Sources include secondary system condensate. [1]The discharge from Outfall 109 is intermittent with an average flow of 1.152 MGD for the 2008 – 2010 time period.			
110 (Internal)	Hot Well Drain – Unit 2*	None	Intermittent[1]	38° 03′ 5.8″ N 77° 47′ 3.1″ W
	*Sources include secondary system condensate. [1]The discharge from Outfall 110 is intermittent with an average flow of 0.137 MGD for the 2008 – 2010 time period.			
111 (Internal)	Unit 1 and 2 Sewage Treatment Plant	Secondary Treatment	0.0058 MGD[1]	38° 03′ 46″ N 77° 47′ 13.4″ W
	[1]The design flow of the sewage treatment plant is 0.030 MGD.			
112 (Internal)	Steam Generator Blowdown – Unit 1	None	0.204 MGD	38° 03′ 5.8″ N 77° 47′ 3.1″ W
113 (Internal)	Steam Generator Blowdown – Unit 2	None	0.204 MGD	38° 03′ 5.8″ N 77° 47′ 3.1″ W
114 (Internal)	Service Water Tie-On Vault Drain	None	Intermittent[1]	38° 03′ 5.8″ N 77° 47′ 3.1″ W
	[1]The discharge from Outfall 114 is intermittent with an average flow of 0.0002 MGD for the 2008 – 2010 time period.			
115 (Internal)	Service Water System High Capacity Blowdown	None	Intermittent[1]	38° 03′ 5.8″ N 77° 47′ 3.1″ W
	[1]The discharge from Outfall 115 is intermittent with no discharge during the 2008 – 2010 time period.			
116 (Internal)	Vacuum Priming Pump*	None	0.0576 MGD	38° 03′ 5.8″ N 77° 47′ 3.1″ W
	*Outfall 116 was added to the permit subsequent to the initial application submittal. Please see Section 17.d.14 of the Fact Sheet.			
117 (Internal)	Salt Storage Pond*	Settling	Intermittent[1]	38° 03′ 5.8″ N 77° 47′ 3.1″ W
	*Outfall 117 was added to the permit subsequent to the initial application submittal. Please see Section 17.d.15 of the Fact Sheet. [1]The discharge from Outfall 117 is projected to be intermittent with an average flow of less than 220,000 gallons. There has been no discharge to date.			

TABLE 2 – Industrial Process and Municipal Wastewater Outfall Descriptions (Continued)				
Outfall Number	**Discharge Sources**	**Treatment**	**Average Flow**	**Latitude and Longitude**
118 (Internal)	Beyond Design Basis Pumps*	None	0.014 MGD	38° 03′ 5.8″ N 77° 47′ 3.1″ W
	* Outfall 118 was added to the permit subsequent to the initial application submittal. Please see Section 17.d.16 of the Fact Sheet.			

See Attachment 4 for topographic map (Lake Anna East, DEQ #170C).

TABLE 3 – Storm Water Outfall Descriptions*		
Outfall Number	**Drainage Area**	**Latitude and Longitude**
014	Outfall 014 has a drainage area of approximately 2 acres, with approximately 1.5 acres of impervious area. Storm water is collected from the western half of the turbine building. There are no industrial activities associated with the drainage area.	38° 03′ 42.7″ N 77° 47′ 28.6″ W
022	Outfall 022 has a drainage area of approximately 52 acres, with approximately 7.1 acres of impervious area. Storm water collected from the higher portion near the contractor shops, parking lots, and the switch yard area flows into a drop grating to a culvert near the northeast corner of the switch yard. The lower, more level portion includes a vehicle maintenance shop, a paint shop, and part of an outdoor equipment laydown area. Storm water runoff from the grassed portions around the shops and laydown areas are collected in a swale which combines via a culvert with Outfall 022.	38° 03′ 52.5″ N 77° 47′ 52.8″ W
024	Outfall 024 has a drainage area of approximately 9 acres with primarily sheet flow runoff and approximately 0.08 acres of impervious area. The area receives flow from a laydown area and an unpaved roadway which is collected in a culvert.	38° 03′ 55.2″ N 77° 47′ 38.4″ W
025	Outfall 025 has a drainage area of approximately 56 acres, with approximately 4 acres being impervious. This area includes a portion of the warehouse facilities, laydown area, and some small utility buildings. Storm water from the northern portion of this drainage area is conveyed under the paved roadway via two culverts. The culvert to the west carries the smaller amount of storm water flow which drains from grassy fields with no industrial activity. The culvert to the east is the sampling point for the outfall since it collects the storm water associated with the above industrial activities.	38° 03′ 16.5″ N 77° 47′ 27.2″ W
027	Outfall 027 has a drainage area of approximately 4 acres, with approximately 1.3 acres being impervious. This area that includes a portion of the warehouse and storage facilities, hazardous waste storage building, roadway, and a fueling area. The area drains storm water to a retention pond which then discharges to the Waste Heat Treatment Facility. Materials are kept undercover with the exception of the fueling area. Storm water from the fueling area is directed through an oil-water separator prior to entering the storm water pond. Outfall 027 is being added with this reissuance as a result of site separation activities.	38° 03′ 11.6″ N 77° 47′ 21.7″ W

*With this reissuance Dominion has requested that storm water Outfalls 023 and 026 be removed from the permit. Storm water runoff from the drainage areas associated with both of these outfalls would travel by sheet flow through extensive vegetation prior to entering Lake Anna. Based on the lack of industrial activity within the drainage area and the fact sheet flow (a non-point source discharge) is not addressed within VPDES regulations, Outfall 023 and Outfall 026 will be removed from the permit with this reissuance. It is staff's best professional judgement that there is no reasonable potential for storm water from these outfalls to impact the water quality of Lake Anna. Please see Attachment 6a for additional information.

11. Wastewater Operation, Sludge Treatment and Disposal Methods:

The Dominion – North Anna Power Station Sewage Treatment Plant is an existing secondary treatment plant with a design capacity of 0.030 MGD. The facility treats domestic sewage from the North Anna Power Station only and does not receive septage from outside sources.

Primary treatment occurs in two parallel aeration tanks with secondary effluent chlorination occurring in the chlorine contact tank. Only one side is used during normal operations with both sides in operation during refueling outages. The sewage treatment plant discharges to the head of the discharge canal via a subsurface discharge pipe. Because the discharge is subsurface, compliance samples are collected at the end of the chlorine contact tank prior to entering the underground piping. This compliance point is designated as Outfall 111.

The solids generated at this facility are transported by Stamie E. Lyttle Company, Incorporated, to either the Louisa Regional Wastewater Treatment Plant (VA0067954) in Louisa or the City of Richmond Wastewater Treatment Plant (VA0063177) in Richmond for final treatment and disposal.

Prior to the disposal of sludge from the sewage treatment plant, the sludge is analyzed for radioactivity. Should sludge containing radioactive material be detected, it will be wasted to drying beds. Handling and disposal of any sludge containing radioactive material is under the regulatory control of the Nuclear Regulatory Commission. Disposal is at an out of state, licensed radioactive waste disposal facility, Duratek, Incorporated, located in Oak Ridge, Tennessee.

12. Discharges, Monitoring Stations, Other Items in Vicinity of Discharges: The facilities and monitoring stations listed below either discharge to or are located within the lower portion of Lake Anna.

TABLE 4	
8-NAR034.92	DEQ fish tissue/sediment and lake monitoring station located approximately 100 yards from the dam, approximately 0.9 miles from of Outfall 001.
8-NAR036.78	DEQ lake monitoring station located in the lower lake near the second dike.
8-NAR037.22	DEQ lake monitoring station located near River Bend Island.
8-NAR043.00	DEQ ambient monitoring station located mid-lake approximately 1.8 miles downstream from Outfalls 009, 013, 014, 016, 020, 021, 022, and 024.
8-NAR044.68	DEQ lake monitoring station located north of the power plant.
8-NAR-1-LACA	Lake Anna Civic Association (LACA) water quality monitoring station located approximately 100 yards from the dam. This station is co-located with DEQ monitoring station 8-NAR034.92.
8-NAR-2-LACA	LACA water quality monitoring station located near River Bend Island. This station is co-located with DEQ monitoring station 8-NAR037.22.
8-NAR-3-LACA	LACA water quality monitoring station located near Smith's Point. This station is co-located with DEQ monitoring station 8-NAR043.00.
8-NAR-4-LACA	LACA water quality monitoring station located north of power plant. This station is co-located with DEQ monitoring station 8-NAR044.68.
VA0072079	Lake Anna Environmental Services Sewage Treatment Plant (Lake Anna).
VAG401017	Laurel Hill Development (Lake Anna, UT).
There are no public water supply intakes within a five mile radius of any of the outfalls listed in Table 4.	

13. Material Storage:

The storage of radioactive materials is regulated by the Nuclear Regulatory Commission. Information relating to the storage of all non-radioactive materials was provided as a component of the reissuance package. See Attachment 5 for a bulk chemical list and storage locations.

14. Site Inspection:

Performed by Susan Mackert on June 7, 2012. The site visit confirms that the information provided in the facility's permit reapplication package dated April 9, 2012, and received April 12, 2012, is accurate and representative of actual site conditions at that time. The site visit memo can be found as Attachment 6a.

An additional site visit was conducted on June 25, 2013, by Susan Mackert and Bryant Thomas. The site visit memo can be found as Attachment 6b.

15. Receiving Stream Water Quality and Water Quality Standards:

a) Ambient Water Quality Data

1) Outfall 001 discharges into the lower segment of the lacustrine area of Lake Anna. The extent of the lacustrine portion of Lake Anna extends from the lower lake area near the dam upstream to approximately rivermile 45.38 (0.7 rivermiles upstream from DEQ monitoring station 8-NAR044.68). The nearest downstream DEQ ambient monitoring station is 8-NAR034.92, located about 100 yards from the dam, approximately 0.9 miles downstream from Outfall 001. The following is the water quality summary for this portion of Lake Anna, as taken from the Draft 2012 Integrated Assessment*:

DEQ fish tissue/sediment and lake monitoring station 8-NAR034.92, approximately 0.5 rivermile upstream from the dam near Route 622, and lake monitoring station 8-NAR036.78. Citizen monitoring station 8NAR-1-LACA.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, Polychlorinated Biphenyl (PCB) fish consumption advisory and DEQ fish tissue monitoring data. Additionally, the fish consumption use is also considered impaired due sufficient excursions above the fish tissue value (TV) for mercury (Hg) in fish tissue.

The aquatic life, recreation, and wildlife uses are considered fully supporting. Nutrients were assessed as fully supporting based on two complete monitoring years (2009 and 2010) for chlorophyll a.

2) Outfalls 009, 013, 016, 020, 021, 014, 022, 024 discharge into the upper segment of the lacustrine area of Lake Anna. The nearest downstream DEQ ambient monitoring station is 8-NAR043.00, located mid lake, approximately 1.8 miles downstream from the outfalls. The following is the water quality summary for this portion of Lake Anna, as taken from the Draft 2012 Integrated Assessment*:

DEQ lake monitoring stations 8-NAR037.22, 8-NAR043.00, and 8-NAR044.68. Citizen monitoring stations 8NAR-2-LACA, 8NAR-3-LACA, and 8NAR-4-LACA.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory and DEQ fish tissue monitoring. Additionally, an excursion above the tissue value (TV) of 300 parts per billion (ppb) for mercury (Hg) was recorded in tissue from one specie (bluegill sunfish) in 2006 at monitoring station 8-NAR044.68, noted by an observed effect.

The aquatic life, recreation, and wildlife uses are considered fully supporting. However, an excursion above the freshwater consensus-based sediment screening value (SV) of 149 parts per million (ppm) for copper (Cu) was recorded in 2006 at monitoring station 8-NAR044.68, noted by an observed effect for the aquatic life use. Nutrients were assessed as fully supporting based on two complete monitoring years (2009 and 2010) for chlorophyll a.

*Virginia's Draft 2012 Integrated Report (IR) has been through the public comment period and reviewed by EPA. The 2012 IR is currently being finalized and prepared for release.

The full planning statement is found as Attachment 7.

b) 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)

TABLE 5

Impairment Information in the Draft 2012 Integrated Report*

Waterbody Name	Impaired Use	Cause	TMDL completed	WLA**	Basis for WLA	TMDL Schedule
Lake Anna (entire lake)	Fish Consumption	PCBs	No	N/A	N/A	2014
Lake Anna (lower lacustrine^)	Fish Consumption	Mercury	No	N/A	N/A	2022

*Virginia's Draft 2012 Integrated Report (IR) has been through the public comment period and reviewed by EPA. The 2012 IR is currently awaiting final approval.

**WLA = Wasteload Allocation

^ = The lower lacustrine portion of Lake Anna consists of the 1562 acre area of the lake bordered by the dam, dike 3 and dike 2.

c) Receiving Stream Water Quality Criteria

Lake Anna was constructed for the primary purpose of providing cooling water for the North Anna Power Station. In addition, Lake Anna provides for the beneficial uses as defined in 9VAC25-260-10.A. Lake Anna also continues to be one of Virginia's prominent sport fisheries. Please see Section 21 of the Fact Sheet for further discussion on Lake Anna and the adjacent Waste Heat Treatment Facility.

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream, Lake Anna, is located within Section 3 of the York River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

Attachment 8 details other water quality criteria applicable to the receiving stream.

Ammonia:

The 7Q10 and 1Q10 of the receiving stream are assumed to be 0.0 MGD as the discharge is to a lake and the permittee has not provided a mixing zone study. In cases such as this, 90th percentile effluent pH and temperature data may be used to establish the ammonia water quality criteria. With this reissuance, staff has re-evaluated the effluent data for pH and temperature from Outfall 001. The 90th percentile pH and temperature values were derived from Discharge Monitoring Report (DMR) form submissions dated

January 2008 to August 2012, and are shown below in Table 6. The ammonia water quality standards calculations are shown in Attachment 8.

TABLE 6 –
Effluent pH and Temperature Values (90th Percentile) –
2012 Reissuance

Data Set	pH	Temperature
January 2008 – August 2012	7.7 S.U.	33ºC

Ammonia is not a parameter of concern due to the fact the major component of the discharge is industrial in nature. While there is a discharge from the Station's wastewater treatment plant (design capacity of 0.03 MGD) at Outfall 111, due to the volume of water within the cooling water discharge canal (1838 MGD) an impact on Lake Anna at Outfall 001 is not expected. As such, it is staff's best professional judgment that ammonia limits need not be developed for this discharge. See Section 17.c (Outfall 001) for additional discussion on nutrient monitoring.

Metals Criteria:

The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/L calcium carbonate). When there is no ambient data available, staff guidance suggests using a default hardness value of 50 mg/L $CaCO_3$ for streams east of the Blue Ridge. The hardness-dependent metals criteria in Attachment 8 are based on this default value.

Nutrient Criteria for Lakes and Reservoirs:

The Virginia Water Quality Standards (9VAC25-260-187) establish nutrient criteria for man-made lakes and reservoirs to protect aquatic life and recreational designated uses. Chlorophyll a criteria are established for all individual water bodies identified in the regulation. In lakes and reservoirs that receive algicide application to manage public water supply sources, the total phosphorus criteria are also applicable. The nutrient criteria for lakes and reservoirs apply at the surface (depth of one meter or less) within the lacustrine portion of the water body between April 1 and October 31. The extent of the lacustrine portion of Lake Anna extends from the lower lake area near the dam upstream to approximately rivermile 45.38 (0.7 rivermiles upstream from DEQ monitoring station 8-NAR044.68).

Lake Anna is considered a cold water fishery with an effective chlorophyll a criterion of 25 ug/L. Additionally, Lake Anna has not been designated as a public water supply and as such, no algicides are applied. Thus, the total phosphorus criteria are not applicable.

d) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Lake Anna, is located within Section 3 of the York River Basin. This section has not been designated with any special standards.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on the noted water quality impairments noted for the fish consumption beneficial use. Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. In this case, since the discharge is to a lake and there has been no mixing zone study approved, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a) Effluent Screening:

The discharges from Outfalls 009, 013, 020 (after initiation of Unit 3 construction), 103, 104, 105, 108, 109, 110, 112, 113, 114, and 115 are covered by Federal Effluent Guidelines established in 40 CFR – Part 423. The discharge from Outfall 111 is covered by Federal Effluent Guidelines established in 40 CFR – Part 133. Where applicable, both the water quality based limits and Federal Effluent Guideline requirements were compared. The most stringent limitation was used as the basis for the final limit. See Sections 17.c, 17.d and 17.e of the Fact Sheet for additional discussion on the applicable Federal Effluent Guidelines.

Effluent data obtained from the permit application and Discharge Monitoring Report (DMR) forms from January 2008 through August 2012 has been reviewed and determined to be suitable for evaluation. The following pollutant requires a wasteload allocation analysis: Total Residual Chlorine (Outfall 001).

b) Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f) (Q_s)] - [(C_s) (f) (Q_s)]}{Q_e}$$

Where:
- WLA = Wasteload allocation
- C_o = In-stream water quality criteria
- Q_e = Design flow
- Q_s = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- f = Decimal fraction of critical flow
- C_s = Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the C_o.

c) Effluent Limitations and Monitoring, Outfalls 001, 009, 013, 016, 020, 021, and 028

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D. requires that monthly and weekly average limitations be imposed for continuous discharges from Publicly Owned Treatment Works (POTW) and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

The following Federal Effluent Guideline abbreviations are used within the discussions in Section 17.c and Sections 19.a through 19.w of the Fact Sheet:

Best Available Technology – BAT
Best Practicable Technology – BPT

1) Outfall 001 (Waste Heat Treatment Facility)

pH:
pH limitations are set at the water quality criteria. As such, the previously established minimum limit of 6.0 S.U. and the maximum limit of 9.0 S.U. shall be carried forward with this reissuance. The monitoring frequency of once per week (1/W) shall be carried forward.

Total Residual Chlorine (TRC):
Federal Effluent Guidelines (40 CFR 423.13(b)(1) – Best Available Technology) state that for any plant with a total rated electric generating capacity of 25 or more megawatts, the quantity of pollutants discharged in once through cooling water from each discharge point shall not exceed the quantity determined by multiplying the flow of once through cooling water times the maximum concentration of 0.2 mg/L. The discharge from Outfall 001 does contain once through cooling water, therefore, Total Residual Chlorine limitations shall be considered.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.13(g)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.13(b)(1). It is staff's best professional judgement that applying the maximum concentration of 0.2 mg/L to the discharge is appropriate and will allow comparison to the Virginia WQS for TRC which are established in concentration units.

In accordance with current DEQ guidance (Memo 00-2011), staff used a default data point of 0.2 mg/L and the most limiting allocations to derive the water quality based limits which were compared against the Federal Effluent Guidelines. The water quality based limits are more stringent than the Federal Effluent Guidelines and as such, the water quality based limits shall be applied.

The resulting water quality based derivation indicated a daily maximum limit of 0.016 mg/L and a monthly average limit of 0.016 mg/L is needed (Attachment 9). These limits are less stringent than the water quality based limits implemented with the previous reissuance (daily maximum limit of 0.011 mg/L and a monthly average limit of 0.011 mg/L). Because antibacksliding provisions do not allow for the relaxation of limitations, the existing daily maximum limit of 0.011 mg/L and a monthly average limit of 0.011 mg/L shall be carried forward. The monitoring frequency of once per month (1/M) shall also be carried forward.

Free Available Chlorine:
In accordance with the Federal Effluent Guidelines found in 40 CFR 423.12(b)(6)– Best Practicable Technology, free available chlorine limitations are applicable to discharges that contain once through cooling water. The discharge from Outfall 001 does contain once through cooling water, therefore, Free Available Chlorine limitations shall be considered.

The sum of free available chlorine and combined available chlorine form total residual chlorine. If established total residual chlorine limits are met, it is assumed free available chlorine will be equivalent to or less than the total residual chlorine. As discussed above, total residual chlorine limitations (daily maximum of 0.011 mg/L and monthly average of 0.011 mg/L) were developed based on the once through cooling water component of the discharge. Free available chlorine associated with the once through cooling water component would be expected to be equivalent to or less than the established total residual chlorine limitations and therefore, comply with the Federal Effluent Guideline (40 CFR 423.12(b)(6)) limitations (daily maximum of 0.5 mg/L and a monthly average of 0.2 mg/L). Therefore, it is staff's best professional judgement that free available chlorine limitations are not warranted given the total residual chlorine limitation is more stringent.

Discharge Temperature:
Discharge temperature monitoring was included with the previous reissuance in 2007. It is staff's best professional judgement that effluent temperature monitoring continue with this reissuance. The monitoring frequency of once per week (1/W) shall be carried forward.

Nutrients (Total Nitrogen, Total Kjeldahl Nitrogen, Nitrate+Nitrite, Total Phosphorus):
Significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries. In response to continued initiatives to reduce nutrients to the Chesapeake Bay, it is staff's best professional judgement that nutrient monitoring at Outfall 001 be implemented with this reissuance. Given the discharge is industrial in nature and ambient monitoring data thus far demonstrates the discharge is not causing instream issues, the monitoring frequency shall be semi-annually (1/6M).

Copper:
Copper was present in the effluent above the detection level, but below the water quality criteria. The dissolved copper result of 2 ug/L was below the acute criteria of 3.6 ug/L and below the chronic criteria of 2.7 ug/L (Attachment 8).

2) Outfall 009 (Settling Pond)

pH:
Federal Effluent Guidelines (40 CFR Part 40 CFR 423.12(b)(1) – Best Practicable Technology) state that all discharges, except once through cooling water shall be within a range of 6.0 S.U. – 9.0 S.U. and water quality criteria states that pH shall be a minimum value of 6.0 S.U. and a maximum value of 9.0 S.U. Because the pH range is the same for both the Federal Effluent Guidelines and the water quality criteria, the previously established minimum limit of 6.0 S.U. and the maximum limit of 9.0 S.U. shall be carried forward with this reissuance. The monitoring frequency of twice per month (2/M) shall be carried forward.

Oil and Grease (O&G):
The previous reissuance of this permit did not include oil and grease limitations. In accordance with the Federal Effluent Guidelines found in 40 CFR 423.12(b)(3) – Best Practicable Technology, oil and grease limitations are applicable to discharges that contain low volume waste sources. Components of the discharge from Outfall 009 contain waste streams which are specifically included in the definition of low volume waste sources. Therefore, it is staff's best professional judgement that oil and grease limitations be implemented with this reissuance.

Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L. At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L to the discharge is the most conservative approach and will maintain and protect the water quality of the receiving stream. A quarterly monitoring frequency (1/3M) is proposed.

Total Suspended Solids (TSS):
Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L to the discharge is the most conservative approach and will maintain and protect the water quality of the receiving stream. These limits are the same as those previous established and as such the daily maximum TSS limit of 100 mg/L and the monthly average TSS limit of 30 mg/L shall be carried forward with this reissuance. The quarterly monitoring frequency (1/3M) shall be carried forward.

3) Outfall 013 (Turbine Building Sumps - #1 and #2)

pH:
Federal Effluent Guidelines (40 CFR Part 40 CFR 423.12(b)(1) – Best Practicable Technology) state that all discharges, except once through cooling water shall be within a range of 6.0 S.U. – 9.0 S.U. and water quality criteria states that pH shall be a minimum value of 6.0 S.U. and a maximum value of 9.0 S.U. Because the pH range is the same for both the Federal Effluent Guidelines and the water quality criteria, the previously established minimum limit of 6.0 S.U. and the maximum limit of 9.0 S.U. shall be carried forward with this reissuance. The monitoring frequency of once per month (1/M) shall be carried forward.

Oil and Grease (O&G):
Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L to the discharge is the most conservative approach and will maintain and protect the water quality of the receiving stream. These limits are the same as those previous established and as such the daily maximum O&G limit of 20 mg/L and the monthly average O&G limit of 15 mg/L shall be carried forward with this reissuance. The monitoring frequency of once per month (1/M) shall also be carried forward.

Total Suspended Solids (TSS):
Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L to the discharge is the most conservative approach and will maintain and protect the water quality of the receiving stream. These limits are the same as those previous established and as such the daily maximum TSS limit of 100 mg/L and the monthly average TSS limit of 30 mg/L shall be carried forward with this reissuance. The monitoring frequency of once per month (1/M) shall also be carried forward.

4) Outfall 016 (Intake Screen Wash Water)

The discharge from this outfall consists entirely of lake water. As such, it's staff's best professional judgement that effluent limits are not necessary. Monitoring for flow on an annual basis (1/YR) shall be carried forward with this reissuance.

5) Outfall 020 (Reverse Osmosis Reject) - Prior to Initiation of Unit 3 Construction. See Section 27 of the Fact Sheet for Additional Information Pertaining to Unit 3 Construction.

pH:
pH limitations are set at the water quality criteria. As such, the previously established minimum limit of 6.0 S.U. and the maximum limit of 9.0 S.U. shall be carried forward with this reissuance. The monitoring frequency of twice per month (2/M) shall be carried forward.

Total Suspended Solids (TSS):
TSS limits are based on staff's best professional judgement. As such, the previously established monthly average limitation of 30 mg/L and the daily maximum limitation of 100 mg/L shall be carried forward with this reissuance. The quarterly monitoring frequency (1/3M) shall be carried forward.

Total Residual Chorine (TRC):
In accordance with the VPDES permit manual, final effluent chlorine limitations for an industrial discharge should be based on the nature of the discharge. It is staff's best professional judgement that the technology based daily maximum limit of 4.0 mg/L in the existing permit is appropriate and shall be carried forward with this reissuance. The monitoring frequency of twice per month (2/M) shall also be carried forward. Because the discharge from Outfall 020 is located approximately 25 feet from the Station's intake structure, the strong circulation pattern resulting from the high volume intake will draw the discharge into the intake flow. As such, a violation of the Water Quality Standards is not expected. Additionally, the discharge from this outfall is not governed by a Federal Effluent Guideline.

6) Outfall 020 (Reverse Osmosis Reject and Reverse Osmosis Backwash) - After Initiation of Unit 3 Construction
See Section 27 of the Fact Sheet for Additional Information Pertaining to Unit 3 Construction.

pH:
Components of the discharge previously discharged through Outfall 009 contain waste streams for which Federal Effluent Guidelines must be applied. Federal Effluent Guidelines (40 CFR Part 40 CFR 423.12(b)(1) – Best Practicable Technology) state that all discharges, except once through cooling water shall be within a range of 6.0 S.U. – 9.0 S.U. and water quality criteria states that pH shall be a minimum value of 6.0 S.U. and a maximum value of 9.0 S.U. Because the pH range is the same for both the Federal Effluent Guidelines and the water quality criteria, a minimum limit of 6.0 S.U. and a maximum limit of 9.0 S.U. shall be applied. A monitoring frequency of twice per month (2/M) shall be implemented.

Oil and Grease (O&G):
In accordance with the Federal Effluent Guidelines found in 40 CFR 423.12(b)(3) – Best Practicable Technology, oil and grease limitations are applicable to discharges that contain low volume waste sources. Components of the discharge previously discharged from Outfall 009 contain waste streams which are specifically included in the definition of low volume waste sources. Therefore, it is staff's best professional judgement that oil and grease limitations be implemented with this reissuance.

Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L. At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L to the discharge is the most conservative approach and will maintain and protect the water quality of the receiving stream. A quarterly monitoring frequency (1/3M) is proposed.

Total Suspended Solids (TSS):
Components of the discharge previously discharged through Outfall 009 contain waste streams for which Federal Effluent Guidelines must be applied. Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L to the discharge is the most conservative approach and will maintain and protect the water quality of the receiving stream. As such a daily maximum TSS limit of 100 mg/L and a monthly average TSS limit of 30 mg/L shall be implemented. A quarterly monitoring frequency (1/3M) is proposed.

Total Residual Chorine (TRC):
Federal Effluent Guidelines (40 CFR 423.13(b)(1) – Best Available Technology) state that for any plant with a total rated electric generating capacity of 25 or more megawatts, the quantity of pollutants discharged in once through cooling water from each discharge point shall not exceed the quantity determined by multiplying the flow of once through cooling water times the maximum concentration of 0.2 mg/L. The discharge from Outfall 020 does not contain once through cooling water, therefore, Total Residual Chlorine limitations shall be based on best professional judgement.

In accordance with the VPDES permit manual, final effluent chlorine limitations for an industrial discharge should be based on the nature of the discharge. It is staff's best professional judgement that the technology based daily maximum limit of 4.0 mg/L established for Outfall 020 prior to Unit 3 construction remains appropriate. A monitoring frequency of twice per month (2/M) is proposed. Because the discharge from Outfall 020 is located approximately 25 feet from the Station's intake structure, the strong circulation pattern resulting from the high volume intake will draw the discharge into the intake flow. As such, a violation of the Water Quality Standards is not expected.

7) Outfall 021 (Reverse Osmosis Drain Line)

The discharge from this outfall is intermittent, having not discharged during the 2008 – 2010 time period. It is staff's best professional judgement that TDS and conductivity monitoring, as well as effluent limits, are not necessary. Monitoring for flow on a quarterly basis (1/3M) shall be carried forward with this reissuance.

8) Outfall 028 (Beyond Design Basis Pumps / Portable Emergency Water Supply Pumps)

This outfall is being added to the permit with this reissuance. In accordance with Nuclear Regulatory Commission (NRC) requirements, Dominion is expanding capabilities to respond to a Beyond Design Basis (BDB) event. A BDB event is a natural disaster that results in damage beyond the design of the Station. As part of the BDB effort, Dominion is obtaining back-up mobile water pumps which can be mobilized to provide water for critical safety uses in the event offsite power and/or access to the ultimate heat sink were lost. Critical safety uses include providing water to the reactor vessel, water to the steam generator for cooling the reactor vessel, water for the spent fuel pool, and water for spraying the containment structure. In addition to the BDB effort, North Anna also maintains portable emergency water supply pumps which provide a supply of water from Lake Anna to the facility during emergency events where the normal water supply source becomes unavailable or inoperable. Dominion is increasing the number of pumps on site and anticipates having a total of ten pumps of various sizes by the end of 2014.

In order to ensure that the pumps are in working order, they must be tested periodically. Dominion plans to initially test each pump at a cove east of the discharge canal which has been designated as Outfall 028. During a test, water would be pumped from Lake Anna and immediately recirculated back into Lake Anna at the same location without coming in contact with any other equipment or processes associated with Station operations. Testing is anticipated to take place on a quarterly basis with a run time of approximately thirty minutes to one hour per test event.

Because the discharge from this outfall consists entirely of water from Lake Anna and no chemical treatment or process exposure occurs, it is staff's best professional judgement that discharge monitoring is not necessary. However, monitoring for flow on a quarterly basis (1/3M) shall be implemented with this reissuance.

d) Effluent Limitations and Monitoring, Internal Outfalls 101, 103, 104, 105, 107, 108, 109, 110, 111, 112, 113, 114,115, 116, 117, and 118

1) Internal Outfall 101 (Condenser Cooling Water)

Heat Rejection:
Heat Rejection is defined as the rate of heat transfer from a unit's condenser to its circulating water system. In general, it is the amount of energy (heat) produced minus the amount converted to electricity. For most electrical generation facilities it is approximately 2/3 of the heat generated to produce the steam to create the electricity. It is calculated directly by conservation of mass and energy either across the circulating water system (condenser tube side) or from the turbine exhaust to the hotwell (condenser shell side). Heat Rejection is measured in BTU/Hour.

The heat rejected to the WHTF is based on the design efficiency of the power plant, approximately $13.3x10^9$ BTU/hr with both units in operation. The value of $13.54x10^9$ BTU/hr is the limit originally assigned to the facility in the 401certification issued in 1973 and is what was used in part to design (size) the WHTF. This heat rejection limit incorporates a 2% margin of safety to account for normal plant performance variations.

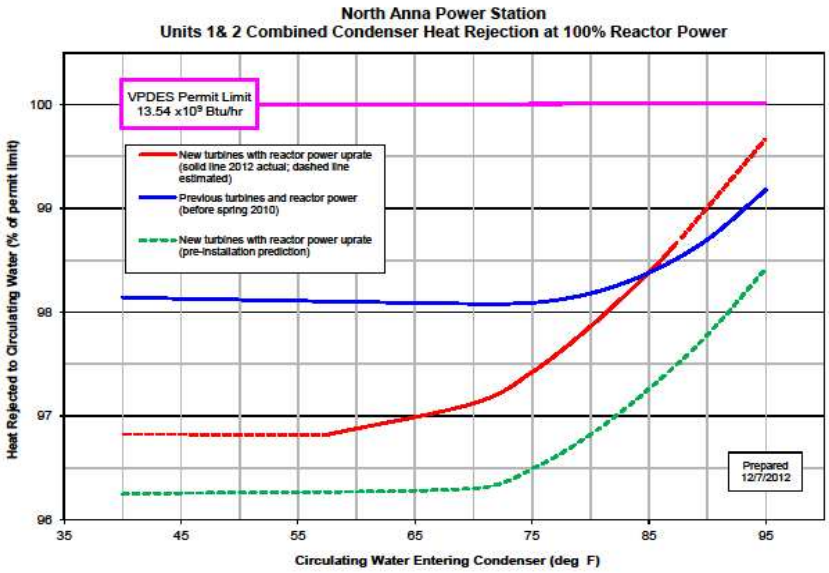
In August 1986, the facility received a license amendment from the Nuclear Regulatory Commission (NRC) to increase the generating capacity at the North Anna Power Station by 4.2%. The rated core power for each unit was increased from 2775 MWt to 2893 MWt. The project was specifically assessed in the 1986 Section 316(a) demonstration submitted to DEQ related to the thermal discharge study. While the uprate may be considered a change in actual operating parameters, the 1986 NRC approval for the uprate indicates that their approval is made without violating any design criteria or safety limits.

During the 2010 – 2012 time period Dominion implemented two capacity uprate projects on Units 1 and 2: 1) Measurement Uncertainty Recapture (MUR) reactor power uprates and 2) Turbine Replacements. These projects, and the predicted impact on heat rejection, were described in an initial October 29, 2009 notification to DEQ-NRO, as well as in meetings and presentations to DEQ-NRO and other Lake Anna stakeholders.

Implementation of the uprates was completed in the Spring of 2012. Consequently, actual operational experience with both uprates over a range of intake water temperatures is now available. Figure 1 below shows the following:

- Observed heat rejection prior to implementation of the uprates;
- Heat rejection that was predicted, by pre-uprate modeling, to occur following implementation of the uprates; and
- Observed heat rejection following implementation of the uprates.
-

Figure 1 – Units 1 and 2 Combined Condenser Heat Rejection at 100% Reactor Power



From Figure 1 above the following may be concluded:

- Implementation of the uprates has reduced heat rejection to the WHTF during periods of cooler intake water temperatures (i.e. < 85°F);
- The reduction in heat rejection has been less than was predicted at all intake water temperatures; and
- At intake water temperatures ≥ 85°F the amount of heat rejected is expected to equal or exceed pre-uprate levels.

Any uprate-related increase in the temperature of the water released to WHTF should be imperceptible. For example, at intake temperatures of 90°F and 95°F the additional heat rejection resulting from the uprates is predicted to increase water temperature leaving the condensers by 0.05°F and 0.08°F, respectively.

Intake water temperatures > 85°F are typically experienced during the summer months at the North Anna Power Station and the amount of heat rejected during these periods is expected to increase from that experienced prior to the uprates. During these warmer periods the operating margin, relative to the BTU/hr permit limit, has been effectively reduced by the uprates. Any uprate-related increase in the temperature of water released to the WHTF should be imperceptible. As such, it is staff's best professional judgement that the existing heat rejection limit of 13.54×10^9 be carried forward.

Heat rejection shall be calculated using the following equation and shall be reported on the DMR for Outfall 101:

$$Q = \frac{C_p m(\Delta T)}{24 \text{ hours}}$$

Where Q = Heat Rejection, BTU/Hour
C_p = Heat Capacity (Specific Heat) of pure water
= 1.0 BTU/pound, ^oF
m = mass of water
= flow rate (MGD) x specific gravity of pure water
= flow rate (MGD) x 8.34 pounds/gallon
ΔT = temperature at outlet condenser waterbox – temperature at inlet condenser waterbox, ^oF

Temperature at Inlet Condenser Waterbox:
Temperature reporting for each unit's inlet condenser was implemented with the previous reissuance in 2007. The inlet temperature is recorded at two circulating water inlet waterboxes associated with each unit and is reported as the average of all four waterboxes. It is staff's best professional judgement that inlet condenser waterbox temperature monitoring and reporting continue with this reissuance. The monitoring frequency of once per day (1/D) shall be carried forward with this reissuance.

Temperature at Outlet Condenser Waterbox:
Temperature reporting for each outlet condenser was implemented with the previous reissuance in 2007. The outlet temperature is recorded at four temperature indicators on each waterbox for an average of sixteen outlet temperatures. It is staff's best professional judgement that outlet condenser waterbox temperature monitoring and reporting continue with this reissuance. The monitoring frequency of once per day (1/D) shall be carried forward with this reissuance.

2) Internal Outfall 103 (Process Water Clarifier)

pH:
Federal Effluent Guidelines (40 CFR 423.12(b)(1) – Best Practicable Technology) state that all discharges, except once through cooling water shall be within a range of 6.0 S.U. – 9.0 S.U. The previously established minimum limit of 6.0 S.U. and the maximum limit of 9.0 S.U. shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

Oil and Grease (O&G):
Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L to the discharge is the most conservative approach. These limits are the same as those previous established and as such the daily maximum O&G limit of 20 mg/L and the monthly average O&G limit of 15 mg/L shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

Total Suspended Solids (TSS):
Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L to the discharge is the most conservative approach. These limits are the same as those previous established and as such the daily maximum TSS limit of 100 mg/L and the monthly average TSS limit of 30 mg/L shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

3) Internal Outfall 104 (Turbine Building Sumps - #1, #2, and #3)

pH:
Federal Effluent Guidelines (40 CFR 423.12(b)(1) – Best Practicable Technology) state that all discharges, except once through cooling water shall be within a range of 6.0 S.U. – 9.0 S.U. The previously established minimum limit of 6.0 S.U. and the maximum limit of 9.0 S.U. shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

Oil and Grease (O&G):
Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L to the discharge is the most conservative approach. These limits are the same as those previous established and as such the daily maximum O&G limit of 20 mg/L and the monthly average O&G limit of 15 mg/L shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

Total Suspended Solids (TSS):
Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L to the discharge is the most conservative approach. These limits are the same as those previous established and as such the daily maximum TSS limit of 100 mg/L and the monthly average TSS limit of 30 mg/L shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

4) Internal Outfall 105 (Bearing Cooling Tower Blowdown)

pH:
Federal Effluent Guidelines (40 CFR 423.12(b)(1) – Best Practicable Technology) state that all discharges, except once through cooling water shall be within a range of 6.0 S.U. – 9.0 S.U. The previously established minimum limit of 6.0 S.U. and the maximum limit of 9.0 S.U. shall be carried forward with this reissuance. The monitoring frequency of once per month (1/M) shall also be carried forward.

Free Available Chlorine:
Federal Effluent Guidelines found in 40 CFR 423.12(b)(7) – Best Practicable Technology and 40 CFR 423.13(d)(1) – Best Available Technology, state that the quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown times the daily maximum concentration of 0.5 mg/L and the monthly average concentration of 0.2 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines 40 CFR 423 423.12(b)(11) and 40 CFR 423.13(g)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitations specified in paragraphs 423.12(b)(7) and 423.13(d)(1). It is staff's best professional judgement that applying the daily maximum concentration of 0.5 mg/L and the monthly average concentration of 0.2 mg/L to the discharge is the most conservative approach. As such, a daily maximum free chlorine limit of 0.5 mg/L and a monthly average free chlorine limit of 0.2 mg/L shall be carried forward with this reissuance. The monitoring frequency of once per month (1/M) shall also be carried forward.

Total Chromium:
Federal Effluent Guidelines (40 CFR 423.13(d)(1) – Best Available Technology) state that the quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown times the daily maximum concentration of 0.2 mg/L and the monthly average concentration of 0.2 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines 40 CFR 423.13(g)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.13(d)(1). It is staff's best professional judgement that applying the daily maximum concentration of 0.2 mg/L and the monthly average concentration of 0.2 mg/L to the discharge is the most conservative approach. As such, the daily maximum total chromium limit of 0.2 mg/L and a monthly average total chromium limit of 0.2 mg/L shall be carried forward with this reissuance. The monitoring frequency of once per quarter (1/3M) shall also be carried forward.

Total Zinc:
Federal Effluent Guidelines (40 CFR 423.13(d)(1) – Best Available Technology) state that the quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown times the daily maximum concentration of 1.0 mg/L and the monthly average concentration of 1.0 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines 40 CFR 423.13(g)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.13(d)(1). It is staff's best professional judgement that applying the daily maximum concentration of 1.0 mg/L and the monthly average concentration of 1.0 mg/L to the discharge is the most conservative approach. As such, the daily maximum total zinc limit of 1.0 mg/L and a monthly average total zinc limit of 1.0 mg/L shall be carried forward with this reissuance. The monitoring frequency of once per quarter (1/3M) shall also be carried forward.

126 Priority Pollutants:
Federal Effluent Guidelines (40 CFR 423.13(d)(1) – Best Available Technology) state that the quantity of pollutants in cooling tower blowdown discharges (Appendix A to Part 423) shall be in non-detectable amounts. As such, the daily maximum and monthly average non-detectable limits shall be carried forward. The monitoring frequency of once per quarter (1/3M) shall also be carried forward.

At the permitting authority's discretion (40 CFR 423.13(d)(3)), compliance with the limitations for the 126 priority pollutants may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR Part 136.

5) Internal Outfall 107 (Bearing Cooling Tower Lake-to-Lake Operations)

Total Residual Chlorine (TRC):
In accordance with the VPDES permit manual, final effluent chlorine limitations for an industrial discharge should be based on the nature of the discharge. Because the discharge from Internal Outfall 107 is directly to the WHTF, water quality based limits are not applicable. Additionally, the discharge from this outfall is not governed by a Federal Effluent Guideline. As such, it is staff's best professional judgement that the technology based daily maximum limit of 4.0 mg/L in the existing permit is appropriate and shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

6) Internal Outfall 108 (Service Water Overflow)

pH:
Federal Effluent Guidelines (40 CFR 423.12(b)(1) – Best Practicable Technology) state that all discharges, except once through cooling water shall be within a range of 6.0 S.U. – 9.0 S.U. The previously established minimum limit of 6.0 S.U. and the maximum limit of 9.0 S.U. shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

Total Suspended Solids (TSS):
The previous reissuance of this permit did not include total suspended solids limitations. In accordance with the Federal Effluent Guidelines found in 40 CFR 423.12(b)(3) – Best Practicable Technology, total suspended solids limitations are applicable to discharges that contain low volume waste sources. Components of the discharge from Internal Outfall108 contain waste streams from the cooling tower, which are specifically included in the definition of low volume waste sources. Therefore, it is staff's best professional judgement that total suspended solids limitations be implemented with this reissuance.

Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L to the discharge is the most conservative approach. Given the intermittent nature of the discharge a monitoring frequency of once per year (1/YR) shall be implemented.

Oil and Grease (O&G):
The previous reissuance of this permit did not include oil and grease limitations. In accordance with the Federal Effluent Guidelines found in 40 CFR 423.12(b)(3) – Best Practicable Technology, oil and grease limitations are applicable to discharges that contain low volume waste sources. Components of the discharge from Internal Outfall108 contain waste streams from the cooling tower, which are specifically included in the definition of low volume waste sources. Therefore, it is staff's best professional judgement that oil and grease limitations be implemented with this reissuance.

Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L. At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L to the discharge is the most conservative approach. Given the intermittent nature of the discharge a monitoring frequency of once per year (1/YR) shall be implemented.

7) Internal Outfall 109 (Hot Well Drain - #1)

pH:
Federal Effluent Guidelines (40 CFR 423.12(b)(1) – Best Practicable Technology) state that all discharges, except once through cooling water shall be within a range of 6.0 S.U. – 9.0 S.U. The previously established minimum limit of 6.0 S.U. and the maximum limit of 9.0 S.U. shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

Oil and Grease (O&G):
Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L to the discharge is the most conservative approach. These limits are the same as those previous established and as such the daily maximum O&G limit of 20 mg/L and the monthly average O&G limit of 15 mg/L shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

Total Suspended Solids (TSS):
Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L to the discharge is the most conservative approach. These limits are the same as those previously established and as such the daily maximum TSS limit of 100 mg/L and the monthly average TSS limit of 30 mg/L shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

8) Internal Outfall 110 (Hot Well Drain - #2)

pH:
Federal Effluent Guidelines (40 CFR 423.12(b)(1) – Best Practicable Technology) state that all discharges, except once through cooling water shall be within a range of 6.0 S.U. – 9.0 S.U. The previously established minimum limit of 6.0 S.U. and the maximum limit of 9.0 S.U. shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

Oil and Grease (O&G):
Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L to the discharge is the most conservative approach. These limits are the same as those previously established and as such the daily maximum O&G limit of 20 mg/L and the monthly average O&G limit of 15 mg/L shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

Total Suspended Solids (TSS):
Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L to the discharge is the most conservative approach. These limits are the same as those previously established and as such the daily maximum TSS limit of 100 mg/L and the monthly average TSS limit of 30 mg/L shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

9) Internal Outfall 111 (Sewage Treatment Plant)

pH:
Federal Effluent Guidelines (40 CFR Part 133.102(c) – Secondary Treatment Regulation) state that the effluent values for pH shall be maintained within the limits of 6.0 S.U. to 9.0 S.U. The previously established minimum limit of 6.0 S.U. and the maximum limit of 9.0 S.U. shall be carried forward with this reissuance. The monitoring frequency of once per month (1/M) shall also be carried forward.

Biochemical Oxygen Demand (BOD_5):
Federal Effluent Guidelines (40 CFR Part 133.102(a) – Secondary Treatment Regulation) state that the BOD_5 30-day average shall not exceed 30 mg/L. The weekly average limit, based on a multiplier of 1.5 times the monthly average, shall be 45 mg/L. These limits are the same as those previously established and as such the 30-day average BOD_5 limit of 30 mg/L and the weekly average BOD_5 limit of 45 mg/L shall be carried forward with this reissuance.

The discharge from Outfall 111 is negligible in terms of contribution to the flow in the discharge canal. However, BOD_5 measurements are intended to monitoring performance of the sewage treatment plant. As such, it is staff's best professional judgement that the monitoring frequency be revised from once every six months (1/6M) to once every month (1/M).

The mass loadings (kg/d) for monthly and weekly averages are calculated by multiplying the BOD_5 concentration values (mg/L), with the design flow of the wastewater treatment plant (in MGD), and a conversion factor of 3.785.

Monthly Average		Weekly Average	
(30 mg/L)(0.03 MGD)(3.785)	= 3.4 kg/day	(45 mg/L)(0.03 MGD)(3.785)	= 5.1 kg/day

These limits are the same as those previously established and as such the 30-day average BOD_5 mass loading limit of 3.4 kg/day and the weekly average BOD_5 mass loading limit of 5.1 kg/day shall be carried forward with this reissuance. The reporting frequency shall be revised from once every six months (1/6M) to once every month (1/M) to provide consistency with the concentration limits.

Total Suspended Solids (TSS):
Federal Effluent Guidelines (40 CFR Part 133.102(b) – Secondary Treatment Regulation) state that the TSS 30-day average shall not exceed 30 mg/L. The weekly average limit, based on a multiplier of 1.5 times the monthly average, shall be 45 mg/L. These limits are the same as those previously established and as such the 30-day average TSS limit of 30 mg/L and the weekly average TSS limit of 45 mg/L shall be carried forward with this reissuance.

The discharge from Outfall 111 is negligible in terms of contribution to the flow in the discharge canal. However, TSS measurements are intended to monitoring performance of the sewage treatment plant. As such, it is staff's best professional judgement that the monitoring frequency be revised from once every three months (1/3M) to once every month (1/M).

The mass loadings (kg/d) for monthly and weekly averages are calculated by multiplying the TSS concentration values (mg/L), with the design flow of the wastewater treatment plant (in MGD), and a conversion factor of 3.785.

Monthly Average		Weekly Average	
(30 mg/L)(0.03 MGD)(3.785)	= 3.4 kg/day	(45 mg/L)(0.03 MGD)(3.785)	= 5.1 kg/day

These limits are the same as those previously established and as such the 30-day average TSS mass loading limit of 3.4 kg/day and the weekly average TSS mass loading limit of 5.1 kg/day shall be carried forward with this reissuance. The reporting frequency shall be revised from once every six months (1/6M) to once every month (1/M) to provide consistency with the concentration limits.

Influent Biochemical Oxygen Demand (BOD_5):
The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for BOD_5. It is staff's best professional judgement that with this reissuance influent monitoring be implemented to ensure compliance with the VPDES regulation and 40 CFR Part 133. As such, this permit shall require influent BOD_5 monitoring on an annual basis to demonstrate 85% removal.

Influent Total Suspended Solids (TSS):
The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for TSS. It is staff's best professional judgement that with this reissuance influent monitoring be implemented to ensure compliance with the VPDES regulation and 40 CFR Part 133. As such, this permit shall require influent TSS monitoring on an annual basis to demonstrate 85% removal.

Total Residual Chlorine (TRC):
Disinfection of domestic sewage is required by the Sewage Collection and Treatment Regulations (9VAC25-790-740). A minimum chlorine residual must be maintained at the exit of the chlorine contact tank to assure adequate disinfection. Monitoring at numerous STPs has concluded that a TRC residual of 1.0 mg/L is an appropriate indicator for demonstration adequate disinfection is achieved. As such, TRC limits were revised to require a minimum level of chlorination to achieve disinfection in accordance with the Sewage Collection and Treatment Regulations. A minimum TRC limit of 1.0 mg/L is proposed. The monitoring frequency of once per day (1/D) shall be carried forward. No more that 10% of the monthly test results for TRC at the exit of the chlorine contact tank shall be <1.0 mg/L with any TRC <0.6 mg/L considered a system failure. Monitoring is only required if chlorination is used in the wastewater treatment process.

The weekly average TRC limit of 2.4 mg/L and the monthly average TRC limit of 2.0 mg/L were removed from the permit as they are water quality based limitations (See Section 21 of the Fact Sheet).

E. coli:
When chlorination is utilized for disinfection, bacteria limits are not required. Data demonstrates that the TRC limit ensures adequate disinfection is achieved. Should the facility utilize an approved alternative disinfection method in lieu of chlorination, *E. coli* limitations shall be required in order to demonstrate effective disinfection is achieved in accordance with the Sewage Collection and Treatment Regulations.

As such, it is staff's best professional judgement the *E. coli* limitations in the existing permit be carried forward with this reissuance. *E. coli* bacteria per 100 mL of water shall not exceed a monthly geometric mean of the following:

	Geometric Mean[1]
Freshwater *E. coli* (N/100 mL)	126

[1]For a minimum of four weekly samples [taken during any calendar month].

10) Internal Outfall 112 (Steam Generator Blowdown – Unit 1)

pH:
Federal Effluent Guidelines (40 CFR 423.12(b)(1) – Best Practicable Technology) state that all discharges, except once through cooling water shall be within a range of 6.0 S.U. – 9.0 S.U. The previously established minimum limit of 6.0 S.U. and the maximum limit of 9.0 S.U. shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

Oil and Grease (O&G):
Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L to the discharge is the most conservative approach. These limits are the same as those previously established and as such the daily maximum O&G limit of 20 mg/L and the monthly average O&G limit of 15 mg/L shall be carried forward

with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

Total Suspended Solids (TSS):
Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L to the discharge is the most conservative approach. These limits are the same as those previously established and as such the daily maximum TSS limit of 100 mg/L and the monthly average TSS limit of 30 mg/L shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

11) Internal Outfall 113 (Steam Generator Blowdown – Unit 2)

pH:
Federal Effluent Guidelines (40 CFR 423.12(b)(1) – Best Practicable Technology) state that all discharges, except once through cooling water shall be within a range of 6.0 S.U. – 9.0 S.U. The previously established minimum limit of 6.0 S.U. and the maximum limit of 9.0 S.U. shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

Oil and Grease (O&G):
Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L to the discharge is the most conservative approach. These limits are the same as those previously established and as such the daily maximum O&G limit of 20 mg/L and the monthly average O&G limit of 15 mg/L shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

Total Suspended Solids (TSS):
Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L to the discharge is the most conservative approach. These limits are the same as those previously established and as such the daily maximum TSS limit of 100 mg/L and the monthly average TSS limit of 30 mg/L shall be carried forward with this reissuance. The monitoring frequency of once per year (1/YR) shall also be carried forward.

12) Internal Outfall 114 (Service Water Tie-On Vault Drain)

pH:
The previous reissuance of this permit did not include pH limitations. In accordance with the Federal Effluent Guidelines found in 40 CFR 423.12(b)(1) – Best Practicable Technology, the pH of all discharges, except once through cooling water, shall be within the range of 6.0 S.U. – 9.0. S.U. As such, staff proposes that a minimum limit of 6.0 S.U. and the maximum limit of 9.0 S.U. be implemented at this outfall with this reissuance. Given the intermittent nature of the discharge a monitoring frequency of once per year (1/YR) shall be implemented.

Total Suspended Solids (TSS):
The previous reissuance of this permit did not include total suspended solids limitations. In accordance with the Federal Effluent Guidelines found in 40 CFR 423.12(b)(3) – Best Practicable Technology, total suspended solids limitations are applicable to discharges that contain low volume waste sources. Components of the discharge from Internal Outfall114 contain waste streams which are specifically included in the definition of low volume waste sources. It is staff's best professional judgement that total suspended solids limitations be in place at Internal Outfall 114.

Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L. At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L to the discharge is the most conservative approach. Given the intermittent nature of the discharge a monitoring frequency of once per year (1/YR) shall be implemented.

Oil and Grease (O&G):
The previous reissuance of this permit did not include oil and grease limitations. In accordance with the Federal Effluent Guidelines found in 40 CFR 423.12(b)(3) – Best Practicable Technology, oil and grease limitations are applicable to discharges that contain low volume waste sources. Components of the discharge from Internal Outfall114 contain waste streams which are specifically included in the definition of low volume waste sources. It is staff's best professional judgement that oil and grease limitations also be in place at Internal Outfall 114.

Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L. At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L to the discharge is the most conservative approach. Given the intermittent nature of the discharge a monitoring frequency of once per year (1/YR) shall be implemented.

13) Internal Outfall 115 (Service Water System High Capacity Blowdown)

pH:
The previous reissuance of this permit did not include pH limitations. In accordance with the Federal Effluent Guidelines found in 40 CFR 423.12(b)(1) – Best Practicable Technology, the pH of all discharges, except once through cooling water, shall be within the range of 6.0 S.U. – 9.0. S.U. It is staff's best professional judgement that pH limitations also be in place at Internal Outfall 115. As such, staff proposes that a minimum limit of 6.0 S.U. and the maximum limit of 9.0 S.U. be implemented at this outfall with this reissuance. A monitoring frequency of once per year (1/YR) shall also be established. Additionally, Internal Outfall 115 has been deemed substantially identical to Internal Outfall 108. Discharge data from Internal Outfall 108 may be submitted to represent the discharge from Internal Outfall 115.

Total Suspended Solids (TSS):
The previous reissuance of this permit did not include total suspended solids limitations. In accordance with the Federal Effluent Guidelines found in 40 CFR 423.12(b)(3) – Best Practicable Technology, total suspended solids limitations are applicable to discharges that contain low volume waste sources. Components of the discharge from Internal Outfall115 contain waste streams which are specifically included in the definition of low volume waste sources. As such, it is staff's best professional judgement that total suspended solids limitations be in place at Internal Outfall 115.

Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L.

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 100 mg/L and the monthly average concentration of 30 mg/L to the discharge is the most conservative approach. Given the intermittent nature of the discharge a monitoring frequency of once per year (1/YR) shall be implemented. Additionally, Internal Outfall 115 has been deemed substantially identical to Internal Outfall 108. Discharge data from Internal Outfall 108 may be submitted to represent the discharge from Internal Outfall 115.

Oil and Grease (O&G):
The previous reissuance of this permit did not include oil and grease limitations. In accordance with the Federal Effluent Guidelines found in 40 CFR 423.12(b)(3) – Best Practicable Technology, oil and grease limitations are applicable to discharges that contain low volume waste sources. Components of the discharge from Internal Outfall115 contain waste streams which are specifically included in the definition of low volume waste sources. It is staff's best professional judgement that oil and grease limitations be in place at Internal Outfall 115.

Federal Effluent Guidelines (40 CFR 423.12(b)(3) - Best Practicable Technology) state that that the quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L. At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.12(b)(3). It is staff's best professional judgement that applying the daily maximum concentration of 20 mg/L and the monthly average concentration of 15 mg/L to the discharge is the most conservative approach. Given the intermittent nature of the discharge a monitoring frequency of once per year (1/YR) shall be implemented. Additionally, Internal Outfall 115 has been deemed substantially identical to Internal Outfall 108. Discharge data from Internal Outfall 108 may be submitted to represent the discharge from Internal Outfall 115.

14) Internal Outfall 116 (Vacuum Priming Pump)

This outfall is being added to the permit with this reissuance. Three vacuum priming pumps are located within the vacuum priming house which is located on the discharge structure at the head of the discharge canal (Attachment 6b). The pumps draw a vacuum on the circulating water tunnel to provide a motive force for the water being discharged through the tunnel. Water is pulled from the discharge canal, run through the pumps to create a vacuum, and is then drained back to the discharge canal. No chemical treatment or process exposure occurs in the vacuum priming house.

Because the discharge from this outfall consists entirely of water from the discharge canal and no chemical treatment or process exposure occurs, it is staff's best professional judgement that discharge monitoring is not necessary. However, monitoring for flow on a semi-annual basis (1/6M) shall be implemented with this reissuance.

15) Internal Outfall 117 (Salt Storage Pond)

This outfall is being added to the permit with this reissuance. To provide for maintenance of paved surfaces during winter months, a new enclosed salt and sand storage facility and salt storage pond have been constructed as part of site separation activities (Attachment 6b). As such, stock piles of salt and sand are not exposed to storm water. However, residual salt and sand from loading and unloading activities would have the potential to be exposed to storm water and/or snow melt conditions. The area around the storage facility is paved and graded such that any storm water/snow melt flow would be directed to a lined 220,000 gallon retention basin. The retention basin is designed without a discharge structure and under normal conditions is not expected to discharge.

The permittee shall maintain a minimum of one foot of freeboard in the salt storage pond. In the case of a storm event(s) that could result in an overflow of the salt storage pond, the permittee is authorized to pump water from the salt storage pond to the discharge canal via Outfall 117. This activity is authorized to provide adequate storage in the salt pond to prevent a discharge to Lake Anna. Any discharge from the salt storage pond to Lake Anna is prohibited by this permit. Overall management and pumping of the salt storage pond shall be conducted in accordance with Part I.G.22 of the permit (see Section 28.v of the Fact Sheet).

The pumped discharge from Outfall 117 (less than 220,000 gallons) would be negligible in terms of contribution to the flow in the discharge canal. It is staff's best professional judgement that there will be no perceptible chloride influence on the discharge canal or WHTF and as such, discharge monitoring is not warranted. However, monitoring for flow shall be implemented with this reissuance contingent upon a discharge from Outfall 117.

16) Internal Outfall 118 (Beyond Design Basis Pumps / Portable Emergency Water Supply Pumps)

This outfall is being added to the permit with this reissuance. In accordance with Nuclear Regulatory Commission (NRC) requirements, Dominion is expanding capabilities to respond to a Beyond Design Basis (BDB) event. A BDB event is a natural disaster that results in damage beyond the design of the Station. As part of the BDB effort, Dominion is obtaining back-up mobile water pumps which can be mobilized to provide water for critical safety uses in the event offsite power and/or access to the ultimate heat sink were lost. Critical safety uses include providing water to the reactor vessel, water to the steam generator for cooling the reactor vessel, water for the spent fuel pool, and water for spraying the containment structure. In addition to the BDB effort, North Anna also maintains portable emergency water supply pumps which provide a supply of water from the discharge canal to the facility during emergency events where the normal water supply source becomes unavailable or inoperable. Dominion is increasing the number of pumps on site and anticipates having a total of ten pumps of various sizes by the end of 2014.

In order to ensure that the pumps are in working order, they must be tested periodically. Dominion plans to initially test each pump at a cove east of the discharge canal which has been designated as Outfall 028 (see Section 17.c.8 of the Fact Sheet). An additional testing site on the discharge canal, designated as Outfall 118, is planned in the future. During a test, water would be pumped from the discharge canal and immediately recirculated back to the discharge canal at the same location without coming in contact with any other equipment or processes associated with Station operations. Testing is anticipated to take place on a quarterly basis with a run time of approximately thirty minutes to one hour per test event.

Because the discharge from this outfall consists entirely of water from the discharge canal and no chemical treatment or process exposure occurs, it is staff's best professional judgement that discharge monitoring is not necessary. However, monitoring for flow on a quarterly basis (1/3M) shall be implemented with this reissuance.

e) Effluent Limitations and Monitoring Summary.

Effluent limitations and monitoring requirements for the facility's outfalls are presented in Section 19 a. – Section 19.y of the Fact Sheet. When applicable, both water quality based limits and Federal Effluent Guideline requirements were compared for these outfalls. The most stringent limitation was used as the basis for the final limit.

For Outfall 111, the mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow value (in MGD) and a conversion factor of 3.785.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for BOD and TSS (or 65% for equivalent to secondary). This permit requires influent BOD and TSS monitoring on an annual basis, at Outfall 111, to demonstrate 85% removal.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

18. Antibacksliding:

Outfall 111

With this reissuance, the monthly average (2.0 mg/L) and weekly average (2.4 mg/L) TRC limitations were removed from the permit as they are water quality based limitations (See Section 21 of the Fact Sheet). Disinfection of domestic sewage is required by the Sewage Collection and Treatment Regulations (9VAC25-790-740). A minimum chlorine residual must be maintained at the exit of the chlorine contact tank to assure adequate disinfection. Monitoring at numerous STPs has concluded that a TRC residual of 1.0 mg/L is an appropriate indicator for demonstration adequate disinfection is achieved. As such, TRC limits were revised to require a minimum level of chlorination to achieve disinfection in accordance with the Sewage Collection and Treatment Regulations. A minimum TRC limit of 1.0 mg/L is proposed. The monitoring frequency of once per day (1/D) shall be carried forward. No more that 10% of the monthly test results for TRC at the exit of the chlorine contact tank shall be <1.0 mg/L with any TRC <0.6 mg/L considered a system failure. Anti-backsliding provisions are not applicable.

19a. Effluent Limitations/Monitoring Requirements: Outfall 001 (Waste Heat Treatment Facility at Dike 3)

Average flow is 2335.8 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

Samples and measurements shall be taken at Dike 3 prior to subsurface discharge to Lake Anna.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/W	Estimate
pH	2	NA	NA	6.0 S.U.	9.0 S.U.	1/W	Grab
Total Residual Chlorine (TRC)	1,2	0.011 mg/L	0.011 mg/L	NA	NA	1/M	Grab
Temperature	1	NL (^{o}C)	NA	NA	NL (^{o}C)	1/W	IS
Total Nitrogen	1	NL (mg/L)	NA	NA	NA	1/6M	Calculated
Total Kjeldahl Nitrogen (TKN)	1	NL (mg/L)	NA	NA	NA	1/6M	Grab
Nitrate+Nitrite (NO_2+NO_3)	1	NL (mg/L)	NA	NA	NA	1/6M	Grab
Total Phosphorus	1	NL (mg/L)	NA	NA	NA	1/6M	Grab
Chronic Toxicity – *C. dubia* (TU_c)	1	NA	NA	NA	NL	1/YR	Grab
Chronic Toxicity – *P. promelas* (TU_c)	1	NA	NA	NA	NL	1/YR	Grab

The basis for the limitations codes are:

1. Best Professional Judgement
2. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
IS = Immersion stabilization.

1/W = Once every week.
1/M = Once every month.
1/6M = Once every six months.
1/YR = Once every year.

Total Nitrogen = The sum of Total Kjeldahl Nitrogen and NO_2+NO_3 and shall be calculated from the results of those tests.

1/6M = The semi-annual monitoring periods shall be January 1 – June 30 and July 1 – December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (July 10 and January 10, respectively).

1/YR = The annual monitoring period shall be January 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (January 10).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

19b. Effluent Limitations/Monitoring Requirements: Outfall 009 (Settling Pond)

Average flow is 0.576 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, or until Unit 3 construction is initiated, whichever comes first.

Samples shall be taken at the discharge to Lake Anna.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	2/M	Estimate
pH	1a,2	NA	NA	6.0 S.U.	9.0 S.U.	2/M	Grab
Oil & Grease (O&G)	1b,1c	15 mg/L	20 mg/L	NA	NA	1/3M	Grab
Total Suspended Solids (TSS)	1b,1c	30 mg/L	100 mg/L	NA	NA	1/3M	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   a) 40 CFR 423.12(b)(1)
   b) 40 CFR 423.12(b)(3)
   c) 40 CFR 423.12(b)(11)
2. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
2/M = Twice every month.
1/3M = Once every three months.

1/3M = The quarterly monitoring periods shall be January 1 – March 31, April 1 – June 30, July 1 – September 30, and October 1 – December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (April 10, July 10, October 10 and January 10, respectively).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT the pH of all discharges, except once through cooling water, shall be within the range of 6.0 S.U. – 9.0 S.U.

b) 40 CFR 423.12(b)(3) – BPT low volume waste sources establishing daily maximum and monthly average limitations for O&G and TSS.

c) 40 CFR 423.12(b)(11) – BPT quantity of pollutants discharged may be expressed as a concentration instead of a mass balance.

19c. Effluent Limitations/Monitoring Requirements: Outfall 013 (Turbine Building Sumps - #1 and #2)

Average flow is intermittent.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

Samples shall be collected during non-storm events.

Outfall 013 is substantially identical to Outfall 104. Discharge data from Outfall 104 may be submitted to represent Outfall 013.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/M	Estimate
pH	1a,2	NA	NA	6.0 S.U.	9.0 S.U.	1/M	Grab
Oil & Grease (O&G)	1b,1c	15 mg/L	20 mg/L	NA	NA	1/M	Grab
Total Suspended Solids (TSS)	1b,1c	30 mg/L	100 mg/L	NA	NA	1/M	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   - d) 40 CFR 423.12(b)(1)
   - e) 40 CFR 423.12(b)(3)
   - f) 40 CFR 423.12(b)(11)
2. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/M = Once every month.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT the pH of all discharges, except once through cooling water, shall be within the range of 6.0 S.U. – 9.0 S.U.
b) 40 CFR 423.12(b)(3) – BPT low volume waste sources establishing daily maximum and monthly average limitations for O&G and TSS.
c) 40 CFR 423.12(b)(11) – BPT quantity of pollutants discharged may be expressed as a concentration instead of a mass balance.

19d. Effluent Limitations/Monitoring Requirements: Outfall 016 (Intake Screen Wash Water)

Average flow is 3.744 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/YR	Estimate

MGD = Million gallons per day.
NL = No limit; monitor and report.
1/YR = Once every year.

1/YR = The annual monitoring period shall be January 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (January 10).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

19e. Effluent Limitations/Monitoring Requirements: Outfall 020 (Reverse Osmosis Reject)

Average flow is 0.216 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, or until Unit 3 construction is initiated, whichever comes first. The initiation of Unit 3 construction will not commence until a certificate of public convenience and necessity is received from the Virginia State Corporation Commission.

Samples shall be taken prior to subsurface discharge to Lake Anna.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	2/M	Estimate
pH	2	NA	NA	6.0 S.U.	9.0 S.U.	2/M	Grab
Total Residual Chlorine (TRC)	1	NL	4.0 mg/L	NA	NA	2/M	Grab
Total Suspended Solids (TSS)	1	30 mg/L	100 mg/L	NA	NA	1/3M	Grab

The basis for the limitations codes are:
1. Best Professional Judgement
2. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.

2/M = Twice every month.
1/3M = Once every three months.

1/3M = The quarterly monitoring periods shall be January 1 – March 31, April 1 – June 30, July 1 – September 30, and October 1 – December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (April 10, July 10, October 10 and January 10, respectively).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

19f. Effluent Limitations/Monitoring Requirements: Outfall 020 (Reverse Osmosis Reject and Reverse Osmosis Backwash)

Average flow is 0.716 MGD.

Effective Dates: During the period beginning with initiation of Unit 3 construction and lasting until the expiration date. The initiation of Unit 3 construction will not commence until a certificate of public convenience and necessity is received from the Virginia State Corporation Commission.

Samples shall be taken prior to subsurface discharge to Lake Anna.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	2/M	Estimate
pH	2,3a	NA	NA	6.0 S.U.	9.0 S.U.	2/M	Grab
Total Residual Chlorine (TRC)	1	NL	4.0 mg/L	NA	NA	2/M	Grab
Total Suspended Solids (TSS)	3b,3c	30 mg/L	100 mg/L	NA	NA	1/3M	Grab or 24H-C
Oil & Grease (O&G)	3b,3c	15 mg/L	20 mg/L	NA	NA	1/3M	Grab

The basis for the limitations codes are:

1. Best Professional Judgement
2. Water Quality Standards
3. Federal Effluent Requirements
   a) 40 CFR 423.12(b)(1)
   b) 40 CFR 423.12(b)(3)
   c) 40 CFR 423.12(b)(11)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.

2/M = Twice every month.
1/3M = Once every three months.

1/3M = The quarterly monitoring periods shall be January 1 – March 31, April 1 – June 30, July 1 – September 30, and October 1 – December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (April 10, July 10, October 10 and January 10, respectively).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

24H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 24-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of twenty-four (24) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum twenty-four (24) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by ≥10% or more during the monitored discharge. An alternative 24-hour composite sampling approach may be approved by DEQ.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT the pH of all discharges, except once through cooling water, shall be within the range of 6.0 S.U. – 9.0 S.U.

b) 40 CFR 423.12(b)(3) – BPT low volume waste sources establishing daily maximum and monthly average limitations for O&G and TSS.

c) 40 CFR 423.12(b)(11) – BPT quantity of pollutants discharged may be expressed as a concentration instead of a mass balance.

19g. Effluent Limitations/Monitoring Requirements: Outfall 021 (Reverse Osmosis Drain Line)

Average flow is intermittent.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/3M	Estimate

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
1/3M = Once every three months.

1/3M = The quarterly monitoring periods shall be January 1 – March 31, April 1 – June 30, July 1 – September 30, and October 1 – December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (April 10, July 10, October 10 and January 10, respectively).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

19h. Effluent Limitations/Monitoring Requirements: Outfall 028 (Beyond Design Basis Pumps / Portable Emergency Water Supply Pumps)

Average flow is 0.014 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/3M	Estimate

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
1/3M = Once every three months.

1/3M = The quarterly monitoring periods shall be January 1 – March 31, April 1 – June 30, July 1 – September 30, and October 1 – December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (April 10, July 10, October 10 and January 10, respectively).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

19i. Effluent Limitations/Monitoring Requirements: Outfall 101 (Condenser Cooling Water)

Average flow is 1838.8 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)[1]	NA	NL	NA	NA	NL	1/D	Calculated and Recorded
Temperature – Inlet Condenser Waterbox	1	NL (^{o}F)	NL (^{o}F)	NA	NA	1/D	Recorded
Temperature – Outlet Condenser Waterbox	1	NL (^{o}F)	NL (^{o}F)	NA	NA	1/D	Recorded
Heat Rejection[2]	1	NA	NA	NA	13.54×10^{9} BTU/hr	1/D	Calculated

The basis for the limitations codes are:

1. Best Professional Judgement

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
1/D = Once every day.

[1] The value reported as the daily maximum flow for the report period shall be the intake flow rate which occurred on the day that the maximum heat rejected was calculated from Units 1 and/or 2.

[2] Heat rejected rate submitted monthly shall be a calculation of the maximum heat directed to the waste heat treatment facility from Units 1 and/or 2. Calculations are to be included with the monthly DMR.

19j. Effluent Limitations/Monitoring Requirements: Outfall 103 (Process Water Clarifier)

Average flow is 0.312 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

Monitoring for pH shall be conducted in the cooling water discharge canal prior to discharge to the Waste Heat Treatment Facility. All other samples shall be taken from the sample tap at the clarifier building prior to the pipe discharge to the tunnel.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/YR	Estimate
pH	1a	NA	NA	6.0 S.U.	9.0 S.U.	1/YR	Grab
Oil & Grease (O&G)	1b,1c	15 mg/L	20 mg/L	NA	NA	1/YR	Grab
Total Suspended Solids (TSS)	1b,1c	30 mg/L	100 mg/L	NA	NA	1/YR	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   a) 40 CFR 423.12(b)(1)
   b) 40 CFR 423.12(b)(3)
   c) 40 CFR 423.12(b)(11)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/YR = Once every year.

1/YR = The annual monitoring period shall be January 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (January 10).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT the pH of all discharges, except once through cooling water, shall be within the range of 6.0 S.U. – 9.0 S.U.

b) 40 CFR 423.12(b)(3) – BPT low volume waste sources establishing daily maximum and monthly average limitations for O&G and TSS.

c) 40 CFR 423.12(b)(11) – BPT quantity of pollutants discharged may be expressed as a concentration instead of a mass balance.

19k. Effluent Limitations/Monitoring Requirements: Outfall 104 (Turbine Building Sumps – 1, 2, and 3)

Average flow is 0.288 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

Monitoring for pH shall be conducted in the cooling water discharge canal prior to discharge to the Waste Heat Treatment Facility. All other samples shall be taken prior to mixing with storm water.

Outfall 104 is substantially identical to Outfall 013. Discharge data from Outfall 104 may be submitted to represent Outfall 013.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/YR	Estimate
pH	1a	NA	NA	6.0 S.U.	9.0 S.U.	1/YR	Grab
Oil & Grease (O&G)	1b,1c	15 mg/L	20 mg/L	NA	NA	1/YR	Grab
Total Suspended Solids (TSS)	1b,1c	30 mg/L	100 mg/L	NA	NA	1/YR	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   a) 40 CFR 423.12(b)(1)
   b) 40 CFR 423.12(b)(3)
   c) 40 CFR 423.12(b)(11)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/YR = Once every year.

1/YR = The annual monitoring period shall be January 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (January 10).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT the pH of all discharges, except once through cooling water, shall be within the range of 6.0 S.U. – 9.0 S.U.

b) 40 CFR 423.12(b)(3) – BPT low volume waste sources establishing daily maximum and monthly average limitations for O&G and TSS.

c) 40 CFR 423.12(b)(11) – BPT quantity of pollutants discharged may be expressed as a concentration instead of a mass balance.

19l. Effluent Limitations/Monitoring Requirements: Outfall 105 (Bearing Cooling Tower Blowdown)

Average flow is 0.084 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

Monitoring for pH shall be conducted in the cooling water discharge canal prior to discharge to the Waste Heat Treatment Facility. All other samples shall be taken at the sample tap before entering the tunnel at the turbine building basement.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/M	Estimate
pH	1a	NA	NA	6.0 S.U.	9.0 S.U.	1/M	Grab
Free Available Chlorine	1b,1c,1d,1f	0.2 mg/L	0.5 mg/L	NA	NA	1/M	Grab
Total Chromium	1d,1f	0.2 mg/L	0.2 mg/L	NA	NA	1/3M	Grab
Total Zinc	1d,1f	1.0 mg/L	1.0 mg/L	NA	NA	1/3M	Grab
126 Priority Pollutants (Appendix A of 40 CFR 423)	1d,1e	Non-detectable	Non-detectable	NA	NA	1/3M	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   a) 40 CFR 423.12(b)(1)
   b) 40 CFR 423.12(b)(7)
   c) 40 CFR 423.12(b)(11)
   d) 40 CFR 423.13(d)(1)
   e) 40 CFR 423.13(d)(3)
   f) 40 CFR 423.13(g)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/M = Once every month.
1/3M = Once every three months.

1/3M = The quarterly monitoring periods shall be January 1 – March 31, April 1 – June 30, July 1 – September 30, and October 1 – December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (April 10, July 10, October 10 and January 10, respectively).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT the pH of all discharges, except once through cooling water, shall be within the range of 6.0 S.U. – 9.0 S.U.

b) 40 CFR 423.12(b)(7) – BPT cooling tower blowdown establishing daily maximum and monthly average limitations for Free Available Chlorine.

c) 40 CFR 423.12(b)(11) – BPT quantity of pollutants discharged may be expressed as a concentration instead of a mass balance.

d) 40 CFR 423.13(d)(1) – BAT cooling tower blowdown establishing daily maximum and monthly average limitations for Total Chromium, Total Zinc, and the 126 Priority Pollutants.

e) 40 CFR 423.13(d)(3) – BAT cooling tower blowdown establishing that compliance with limitations for the 126 Priority Pollutants may be determined by engineering calculations.

f) 40 CFR 423.13(g) – BAT quantity of pollutants discharged may be expressed as a concentration instead of a mass balance.

19m. Effluent Limitations/Monitoring Requirements: Outfall 107 (Bearing Cooling Tower Lake-to-Lake Operations)

Average flow is intermittent.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

Samples shall be taken at the sample tap before entering the tunnel at the turbine building basement.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/YR	Estimate
Total Residual Chlorine (TRC)	1	NA	4.0 mg/L	NA	NA	1/YR	Grab

The basis for the limitations codes are:
1. Best Professional Judgement

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
1/YR = Once every year.

1/YR = The annual monitoring period shall be January 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (January 10).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

19n. Effluent Limitations/Monitoring Requirements: Outfall 108 (Service Water Overflow)

Average flow is intermittent.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

Monitoring for pH shall be conducted in the cooling water discharge canal prior to discharge to the Waste Heat Treatment Facility. All other samples shall be taken at the sample tap before entering the tunnel at the turbine building basement.

Outfall 108 is substantially identical to Outfall 115. Discharge data from Outfall 108 may be submitted to represent Outfall 115.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/YR	Estimate
pH	1a	NA	NA	6.0 S.U.	9.0 S.U.	1/YR	Grab
Oil & Grease (O&G)	1b,1c	15 mg/L	20 mg/L	NA	NA	1/YR	Grab
Total Suspended Solids (TSS)	1b,1c	30 mg/L	100 mg/L	NA	NA	1/YR	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   a) 40 CFR 423.12(b)(1)
   b) 40 CFR 423.12(b)(3)
   c) 40 CFR 423.12(b)(11)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/YR = Once every year.

1/YR = The annual monitoring period shall be January 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (January 10).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT the pH of all discharges, except once through cooling water, shall be within the range of 6.0 S.U. – 9.0 S.U.

b) 40 CFR 423.12(b)(3) – BPT low volume waste sources establishing daily maximum and monthly average limitations for O&G and TSS.

c) 40 CFR 423.12(b)(11) – BPT quantity of pollutants discharged may be expressed as a concentration instead of a mass balance.

19o. Effluent Limitations/Monitoring Requirements: Outfall 109 (Hot Well Drain – Unit 1)

Average flow is intermittent.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

Monitoring for pH shall be conducted in the cooling water discharge canal prior to discharge to the Waste Heat Treatment Facility. All other samples shall be taken before discharge to the tunnel.
Outfall 109 is substantially identical to Outfall 110. Discharge data from Outfall 109 may be submitted to represent Outfall 110.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/YR	Estimate
pH	1a	NA	NA	6.0 S.U.	9.0 S.U.	1/YR	Grab
Oil & Grease (O&G)	1b,1c	15 mg/L	20 mg/L	NA	NA	1/YR	Grab
Total Suspended Solids (TSS)	1b,1c	30 mg/L	100 mg/L	NA	NA	1/YR	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   a) 40 CFR 423.12(b)(1)
   b) 40 CFR 423.12(b)(3)
   c) 40 CFR 423.12(b)(11)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/YR = Once every year.

1/YR = The annual monitoring period shall be January 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (January 10).
Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT the pH of all discharges, except once through cooling water, shall be within the range of 6.0 S.U. – 9.0 S.U.
b) 40 CFR 423.12(b)(3) – BPT low volume waste sources establishing daily maximum and monthly average limitations for O&G and TSS.
c) 40 CFR 423.12(b)(11) – BPT quantity of pollutants discharged may be expressed as a concentration instead of a mass balance.

19p. Effluent Limitations/Monitoring Requirements: Outfall 110 (Hot Well Drain – Unit 2)

Average flow is intermittent.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

Monitoring for pH shall be conducted in the cooling water discharge canal prior to discharge to the Waste Heat Treatment Facility. All other samples shall be taken before discharge to the tunnel.
Outfall 110 is substantially identical to Outfall 109. Discharge data from Outfall 109 may be submitted to represent Outfall 110.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/YR	Estimate
pH	1a	NA	NA	6.0 S.U.	9.0 S.U.	1/YR	Grab
Oil & Grease (O&G)	1b,1c	15 mg/L	20 mg/L	NA	NA	1/YR	Grab
Total Suspended Solids (TSS)	1b,1c	30 mg/L	100 mg/L	NA	NA	1/YR	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   a) 40 CFR 423.12(b)(1)
   b) 40 CFR 423.12(b)(3)
   c) 40 CFR 423.12(b)(11)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/YR = Once every year.

1/YR = The annual monitoring period shall be January 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (January 10).
Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT the pH of all discharges, except once through cooling water, shall be within the range of 6.0 S.U. – 9.0 S.U.
b) 40 CFR 423.12(b)(3) – BPT low volume waste sources establishing daily maximum and monthly average limitations for O&G and TSS.
c) 40 CFR 423.12(b)(11) – BPT quantity of pollutants discharged may be expressed as a concentration instead of a mass balance.

19q. Effluent Limitations/Monitoring Requirements: Outfall 111 (0.030 MGD Sewage Treatment Plant)

Average flow is 0.0058 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

Samples shall be collected at the effluent V-notch weir prior to subsurface discharge to the cooling water discharge canal.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/D	Estimate
pH	1c	NA	NA	6.0 S.U.	9.0 S. U.	1/M	Grab
Influent Biochemical Oxygen Demand (BOD_5)*	1a	NL (mg/L)	NA	NA	NA	1/YR	Grab
Influent Total Suspended Solids (TSS)*	1b	NL (mg/L)	NA	NA	NA	1/YR	Grab
Biochemical Oxygen Demand (BOD_5)	1a	30 mg/L 3.4 kg/day	45 mg/L 5.1 kg/day	NA	NA	1/M	Grab
Total Suspended Solids (TSS)	1b	30 mg/L 3.4 kg/day	45 mg/L 5.1 kg/day	NA	NA	1/M	Grab
Total Residual Chlorine (TRC)** (after contact tank)	2,3	NA	NA	1.0 mg/L	NA	1/D	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   a) 40 CFR 133.102(a)
   b) 40 CFR 133.102(b)
   c) 40 CFR 133.103(c)
2. Best Professional Judgement
3. Sewage Collection and Treatment Regulations (9VAC25-790-740)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.

1/D = Once every day.
1/W = Once every week.
1/M = Once every month.
1/YR = Once every year.

1/YR = The annual monitoring period shall be January 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (January 10).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Federal Effluent Requirements:

a) 40 CFR 133.102(a) – Minimum level of effluent quality attainable by secondary treatment in terms of the parameter BOD_5.
b) 40 CFR 133.102(b) – Minimum level of effluent quality attainable by secondary treatment in terms of the parameter TSS.
c) 40 CFR 133.102(c) – Minimum level of effluent quality attainable by secondary treatment in terms of the parameter pH.

Influent Sampling Requirements:

* The VPDES permit regulation at 9VAC25-31-30, 40 CFR 133.102(a), and 40 CFR 133.102(b) require that the facility achieve at least 85% removal for BOD and TSS. Annual monitoring is required to demonstrate 85% removal.

Chlorine Requirements:

** TRC monitoring is only required if chlorination is used in the wastewater treatment process.

19r. Effluent Limitations/Monitoring Requirements: Outfall 112 (Steam Generator Blowdown – Unit 1)

Average flow is 0.204 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

Monitoring for pH shall be conducted in the cooling water discharge canal prior to discharge to the Waste Heat Treatment Facility. All other samples shall be taken at the sample tap before entering the tunnel at the turbine building basement (Unit 1 side).

Outfall 112 is substantially identical to Outfall 113. Discharge data from Outfall 112 may be submitted to represent Outfall 113.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/YR	Estimate
pH	1a	NA	NA	6.0 S.U.	9.0 S.U.	1/YR	Grab
Oil & Grease (O&G)	1b,1c	15 mg/L	20 mg/L	NA	NA	1/YR	Grab
Total Suspended Solids (TSS)	1b,1c	30 mg/L	100 mg/L	NA	NA	1/YR	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   a) 40 CFR 423.12(b)(1)
   b) 40 CFR 423.12(b)(3)
   c) 40 CFR 423.12(b)(11)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/YR = Once every year.

1/YR = The annual monitoring period shall be January 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (January 10).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT the pH of all discharges, except once through cooling water, shall be within the range of 6.0 S.U. – 9.0 S.U.

b) 40 CFR 423.12(b)(3) – BPT low volume waste sources establishing daily maximum and monthly average limitations for O&G and TSS.

c) 40 CFR 423.12(b)(11) – BPT quantity of pollutants discharged may be expressed as a concentration instead of a mass balance.

19s. Effluent Limitations/Monitoring Requirements: Outfall 113 (Steam Generator Blowdown – Unit 2)

Average flow is 0.204 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

Monitoring for pH shall be conducted in the cooling water discharge canal prior to discharge to the Waste Heat Treatment Facility. All other samples shall be taken at the sample tap before entering the tunnel at the turbine building basement (Unit 2 side).

Outfall 113 is substantially identical to Outfall 112. Discharge data from Outfall 112 may be submitted to represent Outfall 113.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/YR	Estimate
pH	1a	NA	NA	6.0 S.U.	9.0 S.U.	1/YR	Grab
Oil & Grease (O&G)	1b,1c	15 mg/L	20 mg/L	NA	NA	1/YR	Grab
Total Suspended Solids (TSS)	1b,1c	30 mg/L	100 mg/L	NA	NA	1/YR	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   a) 40 CFR 423.12(b)(1)
   b) 40 CFR 423.12(b)(3)
   c) 40 CFR 423.12(b)(11)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/YR = Once every year.

1/YR = The annual monitoring period shall be January 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (January 10).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT the pH of all discharges, except once through cooling water, shall be within the range of 6.0 S.U. – 9.0 S.U.

b) 40 CFR 423.12(b)(3) – BPT low volume waste sources establishing daily maximum and monthly average limitations for O&G and TSS.

c) 40 CFR 423.12(b)(11) – BPT quantity of pollutants discharged may be expressed as a concentration instead of a mass balance.

19t. Effluent Limitations/Monitoring Requirements: Outfall 114 (Service Water Tie-On Vault Drain)

Average flow is intermittent.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/YR	Estimate
pH	1a	NA	NA	6.0 S.U.	9.0 S.U.	1/YR	Grab
Oil & Grease (O&G)	1b,1c	15 mg/L	20 mg/L	NA	NA	1/YR	Grab
Total Suspended Solids (TSS)	1b,1c	30 mg/L	100 mg/L	NA	NA	1/YR	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   a) 40 CFR 423.12(b)(1)
   b) 40 CFR 423.12(b)(3)
   c) 40 CFR 423.12(b)(11)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/YR = Once every year.

1/YR = The annual monitoring period shall be January 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (January 10).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT the pH of all discharges, except once through cooling water, shall be within the range of 6.0 S.U. – 9.0 S.U.

b) 40 CFR 423.12(b)(3) – BPT low volume waste sources establishing daily maximum and monthly average limitations for O&G and TSS.

c) 40 CFR 423.12(b)(11) – BPT quantity of pollutants discharged may be expressed as a concentration instead of a mass balance.

19u. Effluent Limitations/Monitoring Requirements: Outfall 115 (Service Water High Capacity Blowdown)

Average flow is intermittent.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

Outfall 115 is substantially identical to Outfall108. Discharge data from Outfall 108 may be submitted to represent Outfall 115.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/YR	Estimate
pH	1a	NA	NA	6.0 S.U.	9.0 S.U.	1/YR	Grab
Oil & Grease (O&G)	1b,1c	15 mg/L	20 mg/L	NA	NA	1/YR	Grab
Total Suspended Solids (TSS)	1b,1c	30 mg/L	100 mg/L	NA	NA	1/YR	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   a) 40 CFR 423.12(b)(1)
   b) 40 CFR 423.12(b)(3)
   c) 40 CFR 423.12(b)(11)
2. Best Professional Judgement

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/YR = Once every year.

1/YR = The annual monitoring period shall be January 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (January 10).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT the pH of all discharges, except once through cooling water, shall be within the range of 6.0 S.U. – 9.0 S.U.

b) 40 CFR 423.12(b)(3) – BPT low volume waste sources establishing daily maximum and monthly average limitations for O&G and TSS.

c) 40 CFR 423.12(b)(11) – BPT quantity of pollutants discharged may be expressed as a concentration instead of a mass balance.

19v. Effluent Limitations/Monitoring Requirements: Outfall 116 (Vacuum Priming Pump)

Average flow is 0.0576 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/6M	Estimate

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
1/6M = Once every six months.

1/6M = The semi-annual monitoring periods shall be January 1 – June 30 and July 1 – December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (July 10 and January 10, respectively).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

19w. Effluent Limitations/Monitoring Requirements: Outfall 117 (Salt Storage Pond)

Average flow is intermittent.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Contingent	Estimate

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.

Contingent = Monitoring of this outfall is only required if a discharge occurs. The reporting frequency shall be on an annual basis (1/YR). The annual monitoring period shall be January 1 through December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Salt Storage Pond Requirements:

In the case of a storm event(s) that could result in an overflow of the salt storage pond, the permittee is authorized to pump water from the salt storage pond to the discharge canal via Outfall 117. Any discharge from the salt storage pond to Lake Anna is prohibited.

19x. Effluent Limitations/Monitoring Requirements: Outfall 118 (Beyond Design Basis Pumps / Portable Emergency Water Supply Pumps)

Average flow is 0.014 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/3M	Estimate

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
1/3M = Once every three months.

1/3M = The quarterly monitoring periods shall be January 1 – March 31, April 1 – June 30, July 1 – September 30, and October 1 – December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (April 10, July 10, October 10 and January 10, respectively).

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

19y. Monitoring Requirements: Outfalls 014, 022, 024, 025 and 027 (Storm Water)

Average flow is variable.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date. Discharges shall be monitored and managed in accordance with Part 1.F.

There shall be no discharge of industrial process water from Outfalls 014, 022, 024, 025, and 027.

20. Other Permit Requirements:

a) Part I.B. of the permit contains additional chlorine monitoring requirements, quantification levels and compliance reporting instructions.

Additional chlorine requirements are necessary for Outfall 111 per the Sewage Collection and Treatment Regulations at 9VAC25-790 and by the Water Quality Standards at 9VAC25-260-170. A minimum chlorine residual must be maintained at the exit of the chlorine contact tank to assure adequate disinfection. No more that 10% of the monthly test results for TRC at the exit of the chlorine contact tank shall be <1.0 mg/L with any TRC <0.6 mg/L considered a system failure. Monitoring at numerous STPs has concluded that a TRC residual of 1.0 mg/L is an appropriate indicator for demonstration adequate disinfection is achieved. *E. coli* limits are defined in this section as well as monitoring requirements to take effect should an alternate means of disinfection be used.

Additional chlorine requirements are necessary for Internal Outfall 105 per Federal Effluent Guidelines 40 CFR Part 423.13(c)(2). Neither free available chlorine nor total residual chlorine may be discharged from any single generating unit for more than two hours per day unless the discharger demonstrates to the permitting authority that discharge for more than two hours is required for macroinvertebrate control. Simultaneous multi-unit chlorination is permitted.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

b) Permit Section Part I.C. of the permit details the requirements for Whole Effluent Toxicity (WET) Program.

The VPDES Permit Regulation at 9VAC25-31-210 requires monitoring and 9VAC25-31-220.I, requires limitations in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. A WET program is imposed for municipal facilities with a design rate >1.0 MGD, with an approved pretreatment program or required to develop a pretreatment program, or those determined by the Board based on effluent variability, compliance history, instream waste concentration, and receiving stream characteristics.

The Dominion – North Anna Power Station's instream waste concentration and the activity at this facility warrant monitoring under the WET program. The test protocol utilizes bioassay-testing methods in measuring the potential for the effluent to cause chronic toxicity to aquatic organism in the receiving stream. With this reissuance, WET language shall carry forward the requirement to conduct annual chronic testing using both *C. dubia* and *P. promelas* as the test species at Outfall 001for the duration of the permit.

c) Permit Section Part I.D. of the permit details the requirements of Lake Level Management and Lake Anna Dam Flow Release Conditions

The State Corporation Commission (SCC) granted a license to Virginia Electric and Power Company in 1969 to construct the Lake Anna Dam for the purpose of impounding the waters of the North Anna River. That license also required a minimum instantaneous water release of 40 cubic feet per second (cfs) from the lake at the Lake Anna dam. The same release rate was required in a February 11, 1972, 21b Certificate and an August 29, 1973, 401 Certificate both issued by the State Water Control Board.

In 2000, the Virginia General Assembly amended the State Water Control Law to require the maintenance of the lake level so as to protect both upstream (lake) and downstream beneficial uses. The statute reads as follows:

> § 62.1-44.15:1.2. Lake level contingency plans.
> Any Virginia Pollutant Discharge Elimination System permit issued for a surface water impoundment whose primary purpose is to provide cooling water to power generators shall include a lake level contingency plan to allow specific reductions in the flow required to be released when the water level above the dam drops below designated levels due to drought conditions. The plan shall take into account and minimize any adverse effects of any release reduction requirements on beneficial uses, as defined in § 62.1-10, within the impoundment, and on downstream users. The reduction in release amounts required by a lake level contingency plan shall not be implemented to the extent they result in an adverse impact to (i) the ability to meet water quality standards based upon permitted discharge amounts, (ii) the ability to provide adequate water supplies for consumptive purposes such as drinking water and fire protection, and (iii) fish and wildlife resources. In the event there is an imminent threat of such an adverse impact, the permit holder and the Department of Environmental Quality shall be notified. Upon such notification, the permit holder may increase release amounts as specified in the permit for up to forty-eight hours or until such time as the Department of Environmental Quality determines whether or not the increase in release amounts is necessary. This section shall not apply to any such facility that addresses releases and flow requirements during drought conditions in a Virginia Water Protection Permit.

During the 2001 permit reissuance, DEQ consulted with various affected stakeholders and DGIF to implement the requirements of the above statute. Using best professional judgement, permit conditions were developed which balanced the upstream and downstream beneficial uses while being protective of the narrative portion of the Water Quality Standards. When these flow release conditions were placed in the 2001 VPDES permit, the 21b and 401 certificates were revoked. The 2001 flow release conditions, with minor edits, were also used in the 2007 VPDES permit.

Since the 2007 permit reissuance, Dominion has obtained coverage under three separate Virginia Water Protection Individual Permits (VWP) for various activities associated with the proposed construction and operation of a third reactor, Unit 3. Part III of the project (VWP 10-2001) proposes a major surface water withdrawal associated with the operational activities of Unit 3 and a change to shoreline wetlands as a result of a permanent increase of 3 inches in the normal target pool elevation (250' above mean sea level) of Lake Anna and the resulting increase in the water levels in the Waste Heat Treatment Facility. A component of the DEQ

Office of Water Supply's evaluation of the water withdrawal for the proposed Unit 3 included consideration of the Lake Level Contingency Plan statute. VWP permit 10-2001, issued on April 9, 2012, incorporates the Lake Level Contingency Plan release schedule from the facility's VPDES permit which is based upon existing Units 1 and 2, along with necessary modifications and additions to account for the water withdrawal associated with the proposed Unit 3. As a result of the issuance of the Part III VWP permit (10-2001), two active permits are in place with Lake Level Contingency Plan requirements. In accordance with Part I.A.1 of the VWP permit (10-2001), "The VPDES permit shall govern releases from the Lake Anna Dam until such time as the permittee has notified DEQ of its intent to implement a permanent increase of three inches in the normal target pool elevation of Lake Anna to support Unit 3 and implements the increase, as provided in Part I.I.1". As of the date of this permit reissuance, Dominion has not notified DEQ of its intent to implement a permanent increase of three inches. Therefore, the Lake Level Contingency Plan requirements found within the 2014 VPDES reissuance shall govern flow releases from the Lake Anna Dam.

Many aspects of the VWP Lake Level Contingency Plan are not appropriate for incorporation into the VPDES permit as they are specific to the operation of the proposed Unit 3. Where appropriate, staff has incorporated language from Part I.F (Lake Level Management and Lake Anna Dam Instream Flow Release Conditions) of the VWP Part III permit (10-2001) to provide consistency between the VWP and VPDES permits. The following discussion is provided:

1) *40cfs Minimum Instantaneous Release:*

As previously discussed, a licensed issued by The State Corporation Commission (SCC) in 1969 required a minimum instantaneous water release of 40 cubic feet per second (cfs) from the lake at the Lake Anna dam. The same release rate was required in a February 11, 1972, 21b Certificate and an August 29, 1973, 401 Certificate both issued by the State Water Control Board.

While flow regime and frequencies of the North Anna River have changed from pre and post construction of the dam, the nearly 40 year existence and operation of the dam has now become the normal or baseline condition for the North Anna River. Flows at the dam are primarily a function of meteorological conditions rather than operational decisions by Dominion. As such, no change to the 40 cfs minimum instantaneous release is proposed with this reissuance.

It should be noted that DEQ will not use flow data from the Partlow flow gage for compliance independent of and without consideration of Dominion's full management of flow releases to comply with the permit conditions outlined in Part I.D. It is recognized that the flow at the gage will vary on a daily basis and it is not possible to maintain a steady release rate. Compliance with flow releases is dependent on Dominion's management of flow releases as described and outlined in Dominion's North Anna River Monitoring Plan and Station Operating Procedures. The gage station is a component of this flow management structure. Data from the gage station shall be used to assist in determining when gate changes are necessary and the degree of change.

However, streamflow data are sometimes altered with field gage calibrations. These recalibrations are based on real-time current conditions and historical data are adjusted to reflect the recalibration. While the North Anna Power Station is required to provide a minimum release rate of 40cfs, retroactive enforcement action will not be taken for release rates less than 40cfs from recalibrated and adjusted data when data are recorded showing release rates met the permit requirements.

2) *248' msl Designated Lake Level:*

The selection of 248' above mean sea level (msl) as the trigger point for release rate reduction is based on historical lake levels and flows in the North Anna River and an attempt to balance the upstream and downstream beneficial uses. The construction of the dam has altered the normal flow patterns of the river and the percent of time flows in the river would be at or below 40cfs. A higher elevation would increase the percent of time the river experienced low flows and a commensurate impact on the aquatic community could be expected. A lower elevation would increase the percent of time recreational uses of the lake are reduced, as well as Dominion's ability to operate the plant. Since 1978 the lake level has gone below 248'

msl four times, in 1993 for one day, in 1998 - 1999 for 7 weeks, in 2001 - 2002 for 60 weeks, and in 2007 - 2008 for 17 weeks. Because Unit 3 is not part of this reissuance, no change to the 248' msl designated trigger point for release rate reduction is proposed with this reissuance.

3) *20 cfs Release Rate:*

When the water elevation of Lake Anna is at or below 248' msl, the permittee shall target a release rate of 20 cfs from the Lake Anna Dam. The selection of 20 cfs as the minimum release rate is based on historical drought flows and the need to protect downstream beneficial uses. The value is based on best professional judgment and is an attempt to balance the protection of upstream and downstream beneficial uses. No change to the 20 cfs minimum flow release rate is proposed with this reissuance.

4) *Contacts:*

When flows are to be reduced, the permit requires notification of stakeholders and contacts. Contacts include those stakeholders who would be significantly affected by the release reduction. With this reissuance, the Lake Anna Civic Association is being added to the contact list to provide consistency with VWP permit requirements. The identified stakeholders are: Hanover County Public Utilities, Bear Island Paper Company, Engel Farms, Incorporated, Pamunkey Indian Tribal Government, Virginia Department of Game and Inland Fisheries, and the Lake Anna Civic Association.

5) *Dam Operation:*

Dominion manages releases from the dam to control lake level, protect dam integrity, and to provide the minimum flow as required. Flow releases to the North Anna River shall be performed in accordance with Station Operating Procedures (SOP). The SOP sets forth Dominion's operation of the two skimmer gates and three radial gates at the dam. In general, the gates are operated based on a lake level of 250' msl. The plan calls for adjustments to be made to flows as the lake level is at 250' msl and rising and at 249.9' msl and falling.

With regard to skimmer gate operation and adjustments, the SOP shall reflect the use of both engineering calculations and the flow gaging station on the North Anna River downstream of the Lake Anna dam (USGS 01670400), with the target of achieving the flow releases identified in this section. The permittee shall update the SOP and submit for approval a summary description of the SOP procedures for skimmer gate adjustments to target flow releases of 40 cfs and below to the DEQ – Northern Regional Office by August 8, 2014. Once approved, the summary description of the SOP procedures shall be an enforceable part of the permit. Any changes to the SOP procedures for skimmer gate adjustments that relate to flow releases shall be submitted for approval to the DEQ - Northern Regional Office through an updated summary description of the SOP procedures prior to implementing the proposed changes.

6) *Incremental Flow Changes:*

The existing permit requires that flow releases be stepped down in increments of approximately 5 cfs with at least a 72-hour wait period following each incremental reduction and prior to any subsequent reduction when the Lake Anna surface water elevation is at or below the 248.0' msl designated level. Given the level of uncertainty associated with controlling actual release flows, the use of 5 cfs as the incremental flow change is prudent so as to mitigate any immediate effects. A 72-hour wait period following incremental reductions allows for the reduced flows to reach downstream users and subsequent assessment(s) of the reduced flow. No change to the flow release reduction increment of 5 cfs or the 72-hour wait period following incremental reductions is proposed with this reissuance.

7) *Low Flow Monitoring:*

The frequency and duration of low flows are likely to cause stress on the aquatic community in the North Anna River. In order to assess the impact of low flows pursuant to statute (§62.1-11.15:1.2 – Lake Level Contingency Plans), the existing permit requires Dominion conduct monitoring of the North Anna River during periods when release rates are less than 40 cfs.

The permittee shall continue to monitor and report in accordance with North Anna River Monitoring Plan – Low Flow Conditions approved on October 14, 2011, or the most recent DEQ approved plan. The permit requires the permittee to update and submit for approval the North Anna River Monitoring Plan – Low Flow Conditions within 180 days (November 8, 2014) of the permit reissuance date. As approved, the monitoring plan shall go in to effect when the Lake Anna surface water elevation falls to 248.0' msl, continuing until the North Anna River flow is returned to 40 cfs. The approved plan is an enforceable part of the permit. Any changes to the plan shall be submitted for approval to the DEQ Northern Regional Office.

8) *Return to 40 cfs*

The existing permit requires that flow releases be stepped up in increments of approximately 5 cfs with at least a 24-hour wait period following each incremental increase and prior to any subsequent increase when the Lake Anna surface water elevation is higher than the 248.0' msl designated level, unless the lake level is increasing rapidly due to significant inflow to the lake. Flows are to be increased using the staged process to 40 cfs. Given the level of uncertainty associated with controlling actual release flows, the use of 5 cfs as the incremental flow change is prudent so as to mitigate any immediate effects. No change to the flow increase increment of 5 cfs or the 24-hour wait period following incremental increases is proposed with this reissuance.

9) *Adverse Effects*

As stated in statute (§62.1-44.15:1.2 – Lake Level Contingency Plans), the reduction in release amounts required by a lake level contingency plan shall not be implemented to the extent they result in an adverse impact to (i) the ability to meet water quality standards based upon permitted discharge amounts, (ii) the ability to provide adequate water supplies for consumptive purposes such as drinking water and fire protection, and (iii) fish and wildlife resources. As such, the release rate established within the permit shall be increased should DEQ receive notification and confirm that there are, or there is an imminent threat of, downstream adverse impacts occurring as a result of the reduced flow rates. Flow rate increases shall occur in 5 cfs increments every twenty-four (24) hours, to a maximum of 40 cfs, until DEQ confirms that the downstream impacts have been mitigated. In determining adverse impacts, DEQ will give the highest priority to protecting the Hanover County's drinking water intake on the North Anna River. In addition, DEQ shall consult with DGIF staff as to the impacts on the aquatic community.

10) *Gage Station*

The existing gage station on the North Anna River downstream of the Lake Anna dam (USGS 01670400), shall remain operational such that flow data are acceptable to be published by the U.S. Geological Survey (USGS). This may be achieved through a cooperative agreement with the USGS for the costs of operation and maintenance of the existing gage station.

11) *Recording of Water Elevation*

The permittee shall install and operate technology to measure and record the water elevation at the Lake Anna dam by May 8, 2015. The lake level recording technology shall, at a minimum, have a measurement accuracy of 0.05 feet and minimize the effects of wave action on water elevation measurements. Lake level measurements shall be recorded at least daily. The procedures for operation and maintenance of the lake level monitoring and recording instrumentation shall be incorporated into the facility's Operation and Maintenance Manual. Installation and operation shall not contravene those requirements established within Part I.G.2.a of VWP Permit 10-2001.

d) Permit Section Part I.E of the permit details the requirements for Post 316(a) Temperature and Fishery Monitoring.

The permittee has been granted a variance in accordance with section 316(a) of the Clean Water Act. In order to support the continuation of the 316(a) thermal variance, it is appropriate that Dominion monitor the thermal effects of the cooling water discharge to determine if there are any impacts to the biology of Lake Anna and the North Anna River. Please see Section 25 of the Fact Sheet for additional discussion.

e) Permit Section Part I.F of the permit details the requirements of a Storm Water Management Plan.

Industrial storm water discharges may contain pollutants in quantities that could adversely affect water quality. Storm water discharges which are discharged through a conveyance or outfall are considered point sources and require coverage by a VPDES permit. The primary method to reduce or eliminate pollutants in storm water discharges from an industrial facility is through the use of best management practices (BMPs). Storm Water Management Plan requirements are derived from the VPDES General Permit for Storm Water Discharges Associated with Industrial Activity, 9VAC25-151 et seq.

21. Waste Heat Treatment Facility:

The State Corporation Commission (SCC) granted a license to Virginia Electric and Power Company in 1969 to construct the Lake Anna Dam for the purpose of impounding the waters of the North Anna River. In 1972, the North Anna River was impounded creating the 9,600 acre Lake Anna to provide condenser cooling water for the company's North Anna Power Station. Adjacent to Lake Anna is a 3,400 acre Waste Heat Treatment Facility (WHTF) which was designed for waste heat treatment. The impounded waters are normally at an elevation of 250' above mean sea level (msl). In authorizing the impoundment of the North Anna River, the SCC specifically acknowledged the creation and distinction between the 9,600 acre lake and the 3,400 acre WHTF.

The WHTF is an interconnected series of three cooling lagoons physically separated from Lake Anna by three earthen dikes. Cooling water from the North Anna Power Station enters the WHTF at lagoon one via the cooling water discharge canal. The WHTF then provides residence time for the dissipation of heat before the water re-enters Lake Anna at dike three. The WHTF is commonly referred to as Lake Anna, but in accordance with the definition of surface waters (9VAC25-31-10), the lagoons are considered a waste treatment system and not surface waters. As such, the WHTF is not subject to the Water Quality Standards (9VAC25-260). Accordingly, staff has not imposed temperature limitations on the discharge from the North Anna Power Station to the WHTF since the WHTF is being used within its defined purpose for heat dissipation.

Beginning with the previous VPDES permit reissuance process in 2006, the Agency's interpretation of the applicability of the Water Quality Standards to the WHTF was questioned. The interpretation and enforcement of the Agency's regulations was affirmed by the Attorney General of Virginia. By letter dated November 30, 2006, the Attorney General concluded that the State Water Control Board (SWCB) did not have the legal authorization to impose thermal effluent limitations on the discharge from the North Anna Power Station into the cooling lagoons (Attachment 10). After the reissuance of the permit in October 2007, a Notice of Appeal was filed on November 28, 2007. The permit remained in litigation until 2012, culminating with an opinion from the Supreme Court of Virginia. The January 13, 2012 decision affirms the State Water Control Board's decision to reissue the VPDES permit to Virginia Electric and Power Company (Attachment 11).

22. 303 (d) Listed Stream Segments and Total Maximum Daily Loads (TMDL):

The receiving stream, Lake Anna, is listed on the current 303(d) list. The fish consumption use is categorized as impaired due to Virginia Department of Health, Division of Health Hazards Control, PCB and mercury fish consumption advisories. The aquatic life, recreation, and wildlife uses are considered fully supporting.

The draft 2012 Assessment for Lake Anna's aquatic life use is considered fully supporting. The assessment utilizes both DEQ data and LACA Level III data. Table 6 below summarizes the assessment results for nutrients, dissolved oxygen, and pH.

TABLE 6 – Aquatic Life Use Assessment Parameter Summary

Parameter	Assessment	Exceedance Rate*
Nutrients (Lacustrine Zone)	Fully Supporting	-
Dissolved Oxygen (D.O.)	Fully Supporting	4.4%
pH	Fully Supporting	0.5%

*In order to fully support the beneficial use, no more than 10.5% of samples can exceed the applicable criteria.

All pH exceedances were noted in the arms of Lake Anna (Pamunkey Arm, Terry's Run Arm, Plentiful Creek, and Contrary Creek). None were in the vicinity of the dam or lower lacustrine area of Lake Anna, which is located in close proximity to Dominion's North Anna Power Station Outfall 001.

The vast majority of DO exceedances were found in the deeper parts of lake, all at deeper depths (usually at or more than ten meters in depth). The station closest to the dam (8-NAR034.92) showed 18 exceedances of the DO criterion, scattered throughout 2008, 2009, and 2010. These exceedances were all found at depths of 9 to 19 meters. These exceedances were all found at lower depths which is indicative of naturally occurring stratification in lakes and impoundments. The only arm of Lake Anna with DO exceedances was the Pamunkey Creek arm at Station 8-PMC002.13.

23. Polychlorinated Biphenyl Compounds (PCBs):

Lake Anna is listed with a PCB impairment. Due to this impairment, the North Anna Power Station is a candidate for low-level PCB monitoring. This is based upon its designation as an industrial facility providing electrical, gas and/or sanitary services. It is staff's best professional judgement that with this reissuance the North Anna Power Station conduct low-level PCB monitoring at the facility's intake, in the discharge canal prior to flow entering the WHTF, and Outfall 001. Because of the trace analytical QLs, this sampling is not intended to evaluate compliance with the Federal Effluent Guideline prohibition on the discharge of PCBs. Rather, it is intended to better understand and characterize potential PCB discharges at the facility.

The facility shall collect two samples within the first three (3) years after the permit reissuance date of May 8, 2014, at the intake, in the discharge canal prior to flow entering the WHTF, and Outfall 001. Monitoring and analysis shall be conducted in accordance with the most current version of EPA Method 1668, or other equivalent methods capable of providing low-detection level, congener specific results (all 209 PCB congeners). Any equivalent method shall be submitted to DEQ-NRO for review and approval prior to sampling and analysis. The sampling protocol shall be submitted to DEQ-NRO for review and approval prior to the first sample collection. It is the responsibility of the permittee to ensure that proper QA/QC protocols are followed during the sample gathering and analytical procedures.

Each sample shall consist of a minimum 2 liter volume. The sample type, either a grab or automated composite, shall be at the discretion of the permittee.

The data shall be submitted to DEQ-NRO by the due date of the DMR for the month following receipt of the results. The permittee shall submit the results electronically. The submittal shall include the unadjusted and appropriately qualified individual PCB congener analytical results. Additionally, laboratory and field QA/QC documentation and results shall be reported. Total PCBs are to be computed as the summation of the reported, quantified congeners.

24. Variances/Alternate Limits or Conditions:

Section 316(a) of the Clean Water Act provides that thermal dischargers can be granted less stringent alternate thermal limits if they can demonstrate the current effluent limitations, based on water quality standards, are more stringent than necessary to protect the aquatic organisms in the receiving waterbody. Usually submitted in the form of a variance request, the 316(a) demonstration must document that the alternate thermal effluent limitation, with respect to the thermal component of the discharge, will assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water into which the discharge is to be made. Thermal variances are authorized by the Virginia Water Quality Standards (9VAC25-260-90) where a thermal variance demonstration is performed in accordance with Section 316(a) of the Clean Water Act.

On April 14, 1983, Virginia Power filed a letter with the State Water Control Board (SWCB) stating their intent to request alternate effluent limitations under Section 316(a) of the Clean Water Act and to conduct a Section 316(a) demonstration study on Lake Anna and the North Anna River. This request was made due to water temperatures in Lake Anna, in the vicinity of Outfall 001, and in the shallow reaches near all of its tributaries that occasionally exceed the maximum criteria of 32^{o}C; thereby subjecting the permittee to possible enforcement actions. The SWCB approved the variance request and demonstration study in June of 1983.

The 316(a) demonstration was conducted in 1984 and 1985 pursuant to a detailed plan of study agreed upon by the SWCB, a state appointed technical advisory committee, and Virginia Power. The basis for demonstrating that alternative temperature effluent limitations are justifiable is as follows:

- A balanced indigenous community has been maintained;
- The community has not sustained prior appreciable harm;
- A shift toward nuisance species in the receiving water has not occurred and is not likely to occur;
- A zone of passage will not be impaired to the extent that it will not provide for normal movement of populations of dominant species of fish, and economically important species of fish, shellfish, and wildlife;
- There will be no adverse impact of threatened or endangered species;
- There will be no destruction of rate or unique habitat; and
- The use of biocides, such as chlorine, has not resulted in appreciable harm to the community.

The SWCB reviewed the study and demonstration report and in September 1986 concluded that the above conditions were met. As such, the SWCB found that effluent limitations more stringent than the thermal limitations included in the permit are not necessary to assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in Lake Anna and the North Anna River downstream of the lake.

Since the original 316(a) study, Dominion has performed temperature monitoring using continuous recorders at monitoring stations located in the upper lake (NAL719ST, NAL719NT, NAL208T, NALINT, NALTHIST, NALBRPTT, NALST10), the Waste Heat Treatment Facility (NADISC1, NAWHTF2, NAWHTF3), and the North Anna river (NARIV601). Please see Attachment 12 for locations of temperature recorders. These temperature recorders are placed at a depth of one meter, with the exception of NALST10 which is placed at a depth of three meters to account for turbulence associated with water discharges from the Waste Heat Treatment Facility to Lake Anna.

In Attachment H of the facility's application package dated April 9, 2012, and received April 12, 2012, Dominion officially requested a continuance of the 316(a) variance with the permit reissuance. The basis for their request is as follows:

- Facility operations have not significantly increased heat input;
- The station's thermal loading to the lake from Units 1 and 2 is not expected to increase; and
- The annual biological reports indicate that Lake Anna and the Lower North Anna River continue to support a well-balanced ecological community.

Staff has evaluated temperature data from the 2008 – 2011 post 316(a) monitoring annual reports. Data indicates that at various times throughout this period hourly high temperatures exceeded the 32^{o}C water quality criteria in Lake Anna, the North Anna River, and in the WHTF. Data for this period also indicates the hourly mean temperature in the North Anna River did not exceed the 32^{o}C water quality criteria. The hourly mean temperature did exceed the 32^{o}C water quality criteria in Lake Anna (NALST10 – August 2011) and in the WHTF. Please see Attachment 13 for temperature data.

Dominion believes that the data generated during the 316(a) demonstration studies remains representative for Lake Anna, the North Anna River, and the North Anna Power Station operations. Based on a review of the annual post 316(a) monitoring reports and in consultation with DGIF (Attachment 14), it is staff's best professional judgement that the 316(a) variance continue with this reissuance. See Section 25 of the Fact Sheet for post 316(a) monitoring requirements which shall be required with the permit reissuance due to the continuance of the variance.

25. Post 316(a) Temperature and Fishery Monitoring:

Temperature Monitoring:
Dominion has been conducting water temperature monitoring to support the 316(a) thermal variance since the variance was originally issued in 1986. Continuous temperature monitoring has occurred at eleven locations; seven in Lake Anna, one in the North Anna River, and three in the WHTF (Attachment 12). Staff believes such monitoring is needed for the following reasons:

- Continued verification of the original 316(a) study results and justification of the variance;
- To assess temperature variations in Lake Anna and the North Anna River from the discharge at Outfall 001; and
- To assess heat dissipation within the WHTF and for data collection for future modeling exercises.

In order to support the continuation of the 316(a) thermal variance, it is appropriate that Dominion monitor the thermal effects of the cooling water discharge to determine if there are any impacts to the biology of Lake Anna and the North Anna River. As such, it is staff's best professional judgement that the requirement for continuous temperature monitoring continue with this reissuance. Dominion shall be required to conduct water temperature monitoring in accordance with the Monitoring Plan for Lake Anna, the Waste Heat Treatment Facility and the North Anna River, dated August 2008, at the established locations noted above in Lake Anna, the North Anna River and in the WHTF.

Fishery Monitoring:
Dominion has been conducting surveys of the fish populations in Lake Anna and the North Anna River to support the 316(a) thermal variance since the variance was originally issued in 1986. Staff believes surveys are needed for the following reasons:

- Continued verification of the original 316(a) study results and justification of the variance; and
- To assess the health and diversity of the fish population of Lake Anna and the North Anna River to ensure the temperature of the cooling water discharge is not causing an impairment.

In order to support the continuation of the 316(a) thermal variance, it is appropriate that Dominion conduct surveys of the fish population to determine if there are any impairments to the health and diversity of the fish population of Lake Anna and the North Anna River. As such, it is staff's best professional judgement that the requirement for fishery monitoring continue with this reissuance.

Surveys shall be conducted in accordance with the methods used in the original 316(a) study and used annually thereafter. Any changes to the survey shall be submitted to the DEQ Northern Regional Office for concurrence prior to implementing the change. DEQ will consult with DGIF staff in assessing survey results and any changes to the survey methods.

Annual Report:
Results from the temperature monitoring and fish surveys shall be summarized and reported to the DEQ Northern Regional Office and DGIF for the preceding calendar year by May 31. The report shall also include an analysis of the results and recommendations for monitoring changes. The annual report shall contain calibration and validation of the temperature recording equipment.

Post 316(a) Monitoring Plan:
The permittee shall review the existing Monitoring Plan for Lake Anna, the Waste Heat Treatment Facility and the North Anna River, dated August 2008, and notify the DEQ Northern Regional Office, in writing, whether it is still accurate and complete by November 8, 2014. If the Monitoring Plan for Lake Anna, the Waste Heat Treatment Facility and the North Anna River is no longer accurate and complete, a revised Monitoring Plan for Lake Anna, the Waste Heat Treatment Facility and the North Anna River shall be submitted for review and approval to the DEQ Northern Regional Office by November 8, 2014. The approved plan is an enforceable part of the permit. Any future changes to the plan must be submitted for approval to the DEQ Northern Regional Office 60 days prior to implementing the proposed changes.

26. pH Monitoring – Internal Outfalls 103, 104, 105, 108, 109, 110, 112, and 113:

The pH limitations for Internal Outfalls 103, 104, 105, 108, 109, 110, 112, and 113 are based on Federal Effluent Guidelines established in 40 CFR Part 423. Effluent guidelines are technology-based regulations that have been developed by the EPA for a specific category of discharger. Monitoring for pH shall be conducted in the cooling water discharge canal prior to discharge to the Waste Heat Treatment Facility. This approach is consistent with reissuances of this permit since 1995.

The quantity of water in the cooling water discharge canal provides a very significant assimilative ability for the small volume discharges associated with these outfalls. Staff would not expect a violation of the water quality based pH limit at Outfall 001 where the Waste Heat Treatment Facility enters Lake Anna.

27. Unit 3 Site Separation

Site separation is necessary to "separate" infrastructure from existing Units 1 and 2 that are in the footprint of the proposed Unit 3. Should Dominion decide to move forward with the proposed Unit 3, the construction and operation of the associated intake structure will require the relocation of the Units 1 and 2 reverse osmosis (R.O.) filter backwash discharge (Outfall 009). New discharge piping will be installed directing the R.O. filter backwash discharge (Outfall 009) to the existing R.O. reject discharge (Outfall 020). Permanent utilization of the new discharge piping and the combined discharge of R.O. reject and R.O. backwash through Outfall 020 will not occur until the initiation of construction of Unit 3. The initiation of Unit 3 construction will not commence until a certificate of public convenience and necessity is received from the Virginia State Corporation Commission.

Staff has reviewed data provided in Dominion's application addendum (#2). By letter dated August 19, 2013, DEQ noted no objection to a temporary relocation of the discharge from Outfall 009 to Outfall 020. The purpose of the temporary discharge was to conduct testing to ensure that the facility systems functioned properly and to identify any potential impacts to the water treatment system. Permanent relocation of Outfall 009 and the subsequent combined discharge from Outfall 020 is authorized with this reissuance only upon initiation of construction of Unit 3 (defined above). Monitoring and effluent requirements based on construction status (prior to or after) are included with this reissuance. Because the discharge from Outfall 020 is located approximately 25 feet from the Station's intake structure, the strong circulation pattern resulting from the high volume intake will draw the discharge into the intake flow.

28. Other Special Conditions:

a) O&M Manual Requirement. The permittee shall maintain a current Operations and Maintenance (O&M) Manual for the facility that is in accordance with Virginia Pollutant Discharge Elimination System Regulations, 9VAC25-31 and the Sewage Collection and Treatment Regulations, 9VAC25-790. The O&M Manual and subsequent revisions shall include the manual effective date and meet Part II.K.2 and Part II.K.4 Signatory Requirements of the permit. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. The permittee shall operate the facility in accordance with the O&M Manual and shall make the O&M manual available to Department personnel for review during facility inspections. Within 30 days of a request by DEQ, the current O&M Manual shall be submitted to the DEQ Northern Regional Office for review and approval.

b) Water Quality Criteria Monitoring (Outfall 001). State Water Control Law §62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent at Outfall 001 once every year for the substances noted in Appendix B of this VPDES permit.

c) Water Quality Criteria Reopener (Outfall 001). The VPDES Permit Regulation at 9VAC25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should data collected and submitted for Attachment A of the permit, indicate the need for limits to ensure protection of water quality criteria, the permit may be modified or alternately revoked and reissued to impose such water quality-based limitations.

d) 126 Priority Pollutants (Outfall 105). Federal Effluent Guidelines (40 CFR 423.13(d)(1)) state that the quantity of pollutants in cooling tower blowdown discharges (Appendix A to Part 423) shall be in non-detectable amounts. Sampling for these pollutants (except total chromium and total zinc) at the discharge point for Outfall 105 shall be conducted quarterly. At the permitting authority's discretion (40 CFR 423.13(d)(3)), compliance with the limitations for the 126 Priority Pollutants may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR Part 136.

e) 95% Capacity Reopener (Outfall 111). The VPDES Permit Regulation at 9VAC25-31-200.B.4. requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. The facility is a PVOTW.

f) Indirect Dischargers (Outfall 111). Required by VPDES Permit Regulation, 9VAC25-31-200 B.1. and B.2. for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

g) CTC, CTO Requirement (Outfall 111). The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.

h) Licensed Operator Requirement (Outfall 111). The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200 C, and Rules and Regulations for Waterworks and Wastewater Works Operators (18VAC160-20-10 et seq.) requires licensure of operators. This facility requires a Class IV operator.

i) Reliability (Outfall 111). The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. Overflow criteria, such as period of discharge, are utilized solely for the establishment of reliability classification for design purposes and are not to be construed as authorization for or defense of an unpermitted discharge to state waters. The treatment works design shall provide for satisfactory operation during power failures, flooding, peak loads, equipment failure, and maintenance shut-down (in accordance with the requirements of the appropriate reliability class). Such design features include: (i) additional electrical power sources; (ii) additional flow storage capacity; and (iii) additional treatment unit operations, which provide for alternate operation in accordance with the issued certificate permit requirements.

1. The 0.030 MGD permitted treatment works shall meet Reliability Class II;
2. The installation of any new pump station shall require Reliability Class I; and
3. The permittee shall be responsible for implementing and maintaining adequate safeguards to prevent the discharge of untreated wastewater and/or partially treated wastewater to Lake Anna that has not been treated in accordance with the requirements of this permit.

j) Sludge Reopener (Outfall 111). The VPDES Permit Regulation at 9VAC25-31-220.C. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the Clean Water Act. The facility includes a sewage treatment works.

k) Sludge Use and Disposal (Outfall 111). The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2., and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.

l) Materials Handling/Storage. 9VAC25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia §62.1-44.16 and §62.1-44.17 authorize the Board to regulate the discharge of industrial waste or other waste.

m) Notification Levels. The permittee shall notify the Department as soon as they know or have reason to believe:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:

(1) One hundred micrograms per liter;

(2) Two hundred micrograms per liter for acrolein and acrylonitrile; five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter for antimony;

(3) Five times the maximum concentration value reported for that pollutant in the permit application; or

(4) The level established by the Board.

b. That any activity has occurred or will occur which would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:

(1) Five hundred micrograms per liter;

(2) One milligram per liter for antimony;

(3) Ten times the maximum concentration value reported for that pollutant in the permit application; or

(4) The level established by the Board.

n) Polychlorinated Biphenyl. There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid. Compliance with this requirement shall be determined using EPA Method 608 (as referenced in 40 CFR Part 136).

o) Liquid Radioactive Waste Discharge. All limitations and monitoring requirements for liquid radioactive waste discharges shall be regulated by the Nuclear Regulatory Commission in accordance with regulations as set forth in 10 CFR Part 20 and 10 CFR Part 50.

p) Use of Chemical Additives. The use of chlorine and/or biocides other than those identified in the current application, for any purpose other than disinfection at the sewage treatment plant, is prohibited without prior notification to the DEQ - Northern Regional Office.

At least thirty days prior to using any chemical additives not identified in the permit application, the permittee shall notify the DEQ - Northern Regional Office, in writing, of the following:

(1) Chemical additives to be employed and their purposes, and MSDS for each proposed additive;
(2) Schedule of additive usage; and
(3) Wastewater treatment and/or retention to be provided during the use of additives.

Should the addition of treatment chemicals significantly alter the characteristics of the effluent, or if their usage becomes persistent or continuous, this permit may be modified or, alternatively, revoked and reissued to include appropriate limitations or conditions.

q) Discharge of Wastewater from Particle Separators. The permittee is authorized to discharge wastewaters generated by the operation of particle separators for supply wells 4 and 6 and the operation of the particle separator and sand filter for the supply well serving the North Anna Nuclear Information Center. Wastewater from these treatment units will be land applied in the vicinity of each of the supply wells. As a result of the nature of the wastewater, the permeability of the area soils and the substantial distance of travel to the nearest surface waters, no discharge to or impact upon State waters is anticipated. There are no monitoring or reporting requirements for these discharges. Should the physical characteristics or volume of wastewater change substantially, the permittee shall notify the DEQ - Northern Regional Office in writing in advance of any such change in operation.

r) Debris Collection. Wastes such as solids, sludges, or other pollutants removed from or resulting from treatment or control of wastewaters, or facility operations, including all debris collected on the intake trash racks, shall be disposed of in a manner to prevent any of the removed substances, or runoff from such substances, from entering waters of the State.

s) 316(b) Special Condition. The facility includes a cooling water intake structure governed by §316(b) of the Clean Water Act which requires that the location, design, construction and capacity of the cooling water intake structures reflect the "best technology available for minimizing adverse environmental impact". The North Anna – May, 1985 environmental report on impingement and entrainment studies conducted at the facility indicated minimal or no adverse environmental impact. The special condition requires continued compliance with §316(b) and submittal of new data that was recently collected in response to EPA's Phase II requirements. Collected data and any changes to the intake structures or conditions will be reevaluated at each reissuance to monitor continued compliance with the requirement. The condition also includes a reopener, should further 316(b) related conditions become necessary once the EPA Phase II rule is finalized or a new BPJ determination is required.

t) PCB Monitoring. The permittee shall conduct PCB monitoring using low-level PCB analysis to support the PCB TMDL for the fish consumption use impairment in Lake Anna.

u) TMDL Reopener. This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

v) Snow and Ice Control Materials. The permittee shall manage the salt storage facility and salt storage pond in accordance with the following:

a. Snow and Ice Control Materials
   1. The use of snow and ice control materials shall be in accordance with manufacturer's instructions.
   2. All snow and ice control equipment and spreaders shall be maintained in accordance with manufacturer's instructions.
   3. There shall be no washing of snow and ice control equipment and/or spreaders that will cause a discharge to the salt storage pond.
   4. Storage piles of snow and ice control materials shall remain enclosed to prevent exposure to precipitation.

b. Salt Storage Pond Maintenance
   1. A minimum of one foot of freeboard shall be maintained in the salt storage pond.
   2. The permittee shall record freeboard levels at least weekly, or more often as necessary, to prevent a discharge to Lake Anna. Records shall include the date and time of the freeboard observation and shall be maintained on site. Records shall be made available to DEQ upon request.

c. Salt Storage Pond Discharge
   1. In the case of a storm event(s) that could result in an overflow of the salt storage pond, the permittee is authorized to pump water from the salt storage pond to the discharge canal via Outfall 117. This activity is authorized to provide adequate storage in the salt pond to prevent a discharge to Lake Anna.
   2. In the event of a discharge from Outfall 117, the permittee shall record the number of days water was pumped from the salt storage pond and the volume discharged. This information shall be submitted with the DMR for the month in which the discharge took place.

d. Storm Water Pollution Prevention
   1. The Storm Water Pollution Prevention Plan (SWPPP) shall be updated to include the salt storage facility and salt storage pond.
   2. Monthly inspections of the salt storage facility shall be conducted. Inspections shall include, but are not limited to, salt storage and handling areas and an evaluation of all BMPs (roofs, housekeeping, pond integrity, etc.).
   3. Employees engaged in snow and ice control shall receive annual training on storm water pollution prevention.

w) Storm Water Sampling. The permittee shall conduct Form 2F Part VII monitoring for storm water Outfall 027 and submit the results to DEQ-NRO by May 8, 2017.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

29. Changes to the Permit from the Previously Issued Permit:

a) Special Conditions:
1. The O&M special condition has been revised to be consistent with current agency practice.
2. The water quality criteria monitoring special condition which was found within Part I.C.2 of the existing permit has been removed and added to Part I.G.b of the permit to be consistent with current agency practice.
3. The water quality criteria reopener special condition which was found within Part I.C.3 of the existing permit has been removed and added to Part I.G.c of the permit to be consistent with current agency practice.
4. The 126 Priority Pollutants special condition which was found within Part I.A of the existing permit has been removed and added to Part I.G.d of the permit.
5. The 95% capacity reopener was modified to reflect the STP is a privately owned treatment works (PVOTW) rather than a publically owned treatment works (POTW) as was noted in the previous reissuance.
6. The reliability class special condition has been enhanced to include the items found in Section 26.i of the Fact Sheet.
7. The special condition requiring for Post 316(a) monitoring has been removed from the special conditions section of the permit and added to Part I.E of the permit.
8. A debris special condition has been added to the permit. The special condition, which was included in the Fact Sheet for the previous reissuance in 2007, was omitted from the final 2007 permit.
9. A special condition requiring low-level PCB monitoring at the intake, in the discharge canal prior to flow entering the WHTF, and Outfall 001 was added with this reissuance based on the PCB Fish Consumption Use Impairment for Lake Anna.
10. A special condition requiring management of snow and ice control materials has been added with this reissuance based on the construction of the salt and sand storage facility and salt storage pond.
11. A special condition requiring the permittee to conduct Form 2F Part VII monitoring for storm water Outfall 027 and submit the results to DEQ-NRO has been added with this reissuance.

b) Monitoring and Effluent Limitations:
1. Nutrient monitoring has been implemented at Outfall 001 to support continued initiatives to reduce nutrients to the Chesapeake Bay.
2. Effluent limits for Oil and Grease (a daily maximum of 20 mg/L and a monthly average of 15 mg/L) have been added to Outfall 009 to be consistent with Federal Effluent Guidelines.
3. Monitoring and effluent limits have been established for Outfall 020 (after initiation of Unit 3 construction).
4. Outfall 028 and quarterly monitoring for flow have been added with this reissuance.
5. Effluent limits for Total Suspended Solids (a daily maximum of 100 mg/L and a monthly average of 30 mg/L) have been added to Internal Outfall 107 to be consistent with Federal Effluent Guidelines.
6. Effluent limits for Oil and Grease (a daily maximum of 20 mg/L and a monthly average of 15 mg/L) have been added to Internal Outfall 107 to be consistent with Federal Effluent Guidelines.
7. Effluent limits for Total Suspended Solids (a daily maximum of 100 mg/L and a monthly average of 30 mg/L) have been added to Internal Outfall 108 to be consistent with Federal Effluent Guidelines.
8. Effluent limits for Oil and Grease (a daily maximum of 20 mg/L and a monthly average of 15 mg/L) have been added to Internal Outfall 108 to be consistent with Federal Effluent Guidelines.
9. Annual influent monitoring for BOD_5 and TSS has been implemented at Internal Outfall 111 in accordance with 9VAC25-31-30 and 40 CFR Part 133 which requires that the facility achieve at least 85% removal for these pollutants.
10. The monitoring frequency and reporting frequency for BOD_5 at Outfall 111 has been increased to once per month (1/M) from once every six months (1/6M).
11. The monitoring frequency and reporting frequency for TSS at Outfall 111 has been increased to once per month (1/M) from once every three months (1/3M).

12. The monthly average (2.0 mg/L) and weekly average (2.4 mg/L) limitations for TRC have been removed from the permit as they are water quality based limitations.
13. A daily minimum TRC limitation (1.0 mg/L) has been imposed with this reissuance in accordance with the Sewage Collection and Treatment Regulations.
14. Limitations for pH have been added to Internal Outfall 114 and Internal Outfall 115.
15. Effluent limits for Total Suspended Solids (a daily maximum of 100 mg/L and a monthly average of 30 mg/L) have been added to Internal Outfalls 114 and Outfall 115 to be consistent with Federal Effluent Guidelines.
16. Effluent limits for Oil and Grease (a daily maximum of 20 mg/L and a monthly average of 15 mg/L) have been added to Internal Outfall 114 and Internal Outfall 115 to be consistent with Federal Effluent Guidelines.
17. Outfall 116 and semi-annual monitoring for flow have been added with this reissuance.
18. Outfall 117 and monitoring for flow, contingent upon a discharge, have been added with this reissuance.
19. Outfall 118 and quarterly monitoring for flow have been added with this reissuance.
20. Since the previous reissuance, the Toxicity Management Program (TMP) name has changed from TMP to Whole Effluent Toxicity Program. This change is reflected within the proposed permit to be consistent to with current agency practice.

c) Other:

1. Compliance reporting requirements for the Maximum Weekly Average (Outfall 111 only) has been added to the permit with this reissuance.
2. The requirement to install a gage station on the North Anna River downstream of the dam (no further than Route 658) has been revised with this reissuance as this requirement has been completed and is no longer necessary. The special condition now requires the gage station be maintained.
3. Language requiring the permittee to submit for approval a monitoring plan for Post 316(a) monitoring by March 31, 2008, has been removed as the requirement has been completed and is no longer necessary.
4. Language has been added to the Lake Level Management and Lake Anna Dam Flow Release Conditions (Part I.D of the permit) that requires the permittee to update and submit for approval a summary description of the SOP procedures for skimmer gate adjustments to target flow releases of 40 cfs and below to the DEQ – Northern Regional Office by August 8, 2014.
5. Language has been added to the Lake Level Management and Lake Anna Dam Flow Release Conditions (Part I.D of the permit) that pertain to the North Anna River Monitoring Plan – Low Flow Conditions requiring the permittee to update and submit for approval the North Anna River Monitoring Plan – Low Flow Conditions to the DEQ - Northern Regional Office by November 8, 2014.
6. Language has been added to the Lake Level Management and Lake Anna Dam Flow Release Conditions (Part I.D of the permit) that pertain to the North Anna River Monitoring Plan – Low Flow Conditions specifying revisions to the plan be submitted for approval to the DEQ - Northern Regional Office at least 60 days prior to implementation.
7. Language has been added to the Lake Level Management and Lake Anna Dam Flow Release Conditions (Part I.D of the permit) to require the installation and operation of measurement technology that minimizes the effects of wave action at the North Anna dam by May 8, 2015.
8. Language has been added to the Post 316(a) Monitoring requirement for the permittee to review the existing plan and notify the DEQ - Northern Regional Office, in writing, whether it is still accurate and complete or submit for approval a revised plan by November 8, 2014.
9. Language has been added to the Post 316(a) Monitoring requirement specifying revisions to the plan be submitted for approval to the DEQ - Northern Regional Office at least 60 days prior to implementation.
10. The submission date for the annual Post 316(a) Monitoring Report has been changed from March 31 to May 31.
11. Overall storm water language has been updated to be consistent with the 2009 – 2014 VPDES General Permit for Storm Water Discharges Associated with Industrial Activity.

12. Storm water language pertaining to quarterly visual monitoring has been updated based on recommended language by the Technical Advisory Committee (TAC) for the 2014 – 2019 General Permit for Storm Water Discharges Associated with Industrial Activity. This language has not been approved by the State Water Control Board, but it is staff's best professional judgement that it be applied to the storm water discharges from the Station:
    - The existing language states that "The visual examination shall be made during daylight hours (e.g., normal working hours)". Based on the TAC recommendation this language shall now read "The visual examination shall be made during normal working hours, where practicable, and when considerations for safety and feasibility allow". This language change does not impact what must be documented during the examination, but rather allows the permittee more flexibility to conduct the examination.
    - The existing language states that "If no qualifying storm event resulted in runoff during daylight hours from the facility during a monitoring quarter, the permittee is excused from visual monitoring for that quarter provided that documentation is included with the monitoring records indicating that no qualifying storm event occurred during daylight hours that resulted in storm water runoff during that quarter". Based on the TAC recommendation, the use of "during normal working hours" has been incorporated to provide consistency. As such, the language shall now read "If no qualifying storm event resulted in runoff during normal working hours from the facility during a monitoring quarter, the permittee is excused from visual monitoring for that quarter provided that documentation is included with the monitoring records indicating that no qualifying storm event occurred during normal working hours that resulted in storm water runoff during that quarter". This language change does not impact what must be documented during the examination, but rather allows the permittee more flexibility to conduct the examination.
13. Storm water Outfall 023 and storm water Outfall 026 were removed with this reissuance.
14. Storm water Outfall 027 was added with this reissuance.
15. Part II.A (Monitoring) of the permit has been updated to incorporate the Virginia Environmental Laboratory Accreditation Program (VELAP) requirements for laboratory analysis.
16. The EPA checklist, found as an attachment to the previous Fact Sheet, is no longer required.

30. Public Notice Information:

First Public Notice Date: February 6, 2014 Second Public Notice Date: February 13, 2014

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ - Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3853, susan.mackert@deq.virginia.gov. See Attachment 15 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

31. Additional Comments:

Previous Board Action(s):
DEQ staff made a presentation for the reissuance of the existing VPDES permit for the Dominion – North Anna Power Station on October 25, 2007. Staff recommended that the Board issue the permit. The Board voted 7 to 0 in favor of staff's recommendation. The final permit was signed on October 25, 2007. After the reissuance of the permit in October 2007, a Notice of Appeal was filed on November 28, 2007. The permit remained in litigation until 2012, culminating with an opinion from the Supreme Court of Virginia. The January 13, 2012 decision affirms the State Water Control Board's decision to reissue the VPDES permit to Virginia Electric and Power Company (Attachment 11).

Staff Comments:
In response to comments provided by EPA and the State Water Control Board during the 2007 VPDES permit reissuance, staff considered the implementation of a temperature limit at Outfall 001. There are two types of limits that could be placed at 001, a maximum temperature and a temperature change through the facility. Staff evaluated the practicality of each approach, and upon review, staff believes both approaches would risk shutting down the power station for no water quality based reason. The limits used in the previous permits, maximum heat rejection limits, combined with the 316(a) confirmation biological monitoring, serves as the most practical means to protect the water quality standards of Lake Anna, without the risk of unnecessarily shutting down the station. The following were taken in to consideration:

1. The amount of heat discharged from the Station is a function of the ambient water temperature at the intake, and as such the Station is not the primary influence on the temperature of Lake Anna; the primary source being heat from solar radiation. Pursuant to the 316(a) demonstration study conducted by Dominion, the Station contributes an additional one-tenth the amount of natural heat that enters the system on summer days. The large seasonal temperature variations (summer vs. winter) demonstrate the overwhelming influence of solar radiation vs. heat discharged by the station. Accordingly, maximum ambient water temperatures are beyond the control of the permittee. Further, due to the size of the lake and its watershed, and the physical features of the lake, there are natural occurring variations in temperature, in excess of a practical temperature change limit, that are beyond the influence of the power station.

2. The overall regulatory approach to the continuation of the 316(a) thermal variance entails establishment of the total heat load which the facility may release, or reject, in conjunction with on-going aquatic monitoring of Lake Anna and the North Anna River below the dam to ensure the biological community is not appreciably impacted from station operations. The heat rejection is reported monthly to DEQ through Discharge Monitoring Results (DMRs). The results of the ecological monitoring are reported annually to DEQ and DGIF. Nearly 30 years of biological monitoring since the approval of the initial 316(a) study demonstrates the lake and river continue to support a diverse, healthy, and balanced fisheries community, and there is no appreciable harm to the overall biological community resulting from operation of the power station.

   The ecological monitoring supports the original 316(a) study results, justifies the continuation of the 316(a) thermal variance, and supports the overall regulatory approach ensuring the protection and maintenance of water quality for Lake Anna and the North Anna River. Staff considered adoption of a numeric temperature limit at Outfall 001, as well as a limit associated with temperature change through the facility, but was not able to determine a biologically-based, meaningful limit that was reasonable to impose.

Staff Comments:
The draft permit was revised on January 28, 2014, to address the discharge from portable emergency water supply pumps identified in email correspondence from Dominion on January 22, 2014. Portable emergency water supply pumps serve the same critical safety use as the Beyond Design Basis pumps that were identified in application addendum number four. Additionally, portable emergency water supply pumps are tested in the same manner as the Beyond Design Basis pumps and in the same location with discharge via Outfall 028 and in the future, Outfall 118. The discharge from portable emergency water supply pumps consists entirely of water from either Lake Anna or the discharge canal. Because no chemical treatment or process exposure occurs with these pumps, they are not considered a source of pollutants.

Based on a telephone conversation with EPA on January 24, 2014, the revised draft which incorporates portable emergency water supply pumps does not need to be submitted for their review.

Staff Comments:
Subsequent to the development of the Fact Sheet, the 2012 IR was finalized. The finalized IR does not change any information found within the planning statement (Attachment 7) and therefore did not result in any changes to the Fact Sheet.

Staff Comments:
Subsequent to the development of the Fact Sheet, the State Water Control Board approved the 2014 – 2019 General Permit for Storm Water Discharges Associated with Industrial Activity. The language that appears in the draft permit is consistent with the approved regulation.

Public Comment:
Comments were received from Hanover County's Department of Public Utilities, Bear Island Paper Company, the Lake Anna Civic Association, and the Blue Ridge Environmental Defense League. The comments did not result in changes to the draft permit. Public comments and staff's response can be found within the reissuance file.

32. Draft Permit Revisions:

TABLE 7 – Draft Permit Revision Summary	
Date of Revision	Reason for Revision
May 23, 2013	Addressing permittee comments dated April 5, 2013
May 30, 2013	Addressing permittee comments dated May 23, 2013
September 5, 2013	Addressing permit application Addendum #1 dated July 5, 2013
September 6, 2013	Addressing permit application Addendum #2 dated July 30, 2013
September 7, 2013	Addressing permittee comments dated August 20, 2013
October 29, 2013	Addressing permittee comments dated October 23, 2013
November 27, 2013	Addressing permit application Addendum #3 dated October 31, 2013
January 6, 2014	Addressing permit application Addendum #4 dated December 18, 2013
January 28, 2014	Addressing Portable Emergency Water Supply Pump as noted in January 22, 2014 email correspondence

Fact Sheet Attachments – Table of Contents

Dominion – North Anna Power Station
VA0052451

2014 Reissuance

NPDES PERMIT RATING WORK SHEET

[X] Regular Addition
[ ] Discretionary Addition
[ ] Score change, but no status Change
[ ] Deletion

VPDES NO. : VA0052451

Facility Name: Dominion – North Anna Power Station
City / County: Mineral / Louisa County
Receiving Water: Lake Anna
Waterbody ID: VAN-F07L

Is this facility a steam electric power plant (sic =4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power Plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rater

[X] Yes; score is 600 (stop here) [ ] NO; (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

[ ] YES; score is 700 (stop here)
[X] NO; (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: _____ Primary Sic Code: 4911 Other Sic Codes: _____ _____ _____

Industrial Subcategory Code: 000 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
[ ] No process waste streams	0	0	[ ] 3.	3	15	[ ] 7.	7	35
[ ] 1.	1	5	[ ] 4.	4	20	[ ] 8.	8	40
[ ] 2.	2	10	[ ] 5.	5	25	[ ] 9.	9	45
			[ ] 6.	6	30	[ ] 10.	10	50

Code Number Checked: NA

Total Points Factor 1: NA

FACTOR 2: Flow/Stream Flow Volume (Complete either Section A or Section B; check only one)

Section A – Wastewater Flow Only considered

Wastewater Type (see Instructions)			Code	Points
Type I:	Flow < 5 MGD	[ ]	11	0
	Flow 5 to 10 MGD	[ ]	12	10
	Flow > 10 to 50 MGD	[ ]	13	20
	Flow > 50 MGD	[ ]	14	30
Type II:	Flow < 1 MGD	[ ]	21	10
	Flow 1 to 5 MGD	[ ]	22	20
	Flow > 5 to 10 MGD	[ ]	23	30
	Flow > 10 MGD	[ ]	24	50
Type III:	Flow < 1 MGD	[ ]	31	0
	Flow 1 to 5 MGD	[ ]	32	10
	Flow > 5 to 10 MGD	[ ]	33	20
	Flow > 10 MGD	[ ]	34	30

Section B – Wastewater and Stream Flow Considered

Wastewater Type (see Instructions)	Percent of Instream Wastewater Concentration at Receiving Stream Low Flow		Code	Points
Type I/III:	< 10 %	[ ]	41	0
	10 % to < 50 %	[ ]	42	10
	> 50%	[ ]	43	20
Type II:	< 10 %	[ ]	51	0
	10 % to < 50 %	[ ]	52	20
	> 50 %	[ ]	53	30

Code Checked from Section A or B: NA

Total Points Factor 2: NA

NPDES PERMIT RATING WORK SHEET

FACTOR 3: Conventional Pollutants

(only when limited by the permit)

A. Oxygen Demanding Pollutants: (check one) ☐ BOD ☐ COD ☐ Other: _____

Permit Limits: (check one)	Code	Points
☐ < 100 lbs/day	1	0
☐ 100 to 1000 lbs/day	2	5
☐ > 1000 to 3000 lbs/day	3	15
☐ > 3000 lbs/day	4	20

Code Number Checked: NA

Points Scored: NA

B. Total Suspended Solids (TSS)

Permit Limits: (check one)	Code	Points
☐ < 100 lbs/day	1	0
☐ 100 to 1000 lbs/day	2	5
☐ > 1000 to 5000 lbs/day	3	15
☐ > 5000 lbs/day	4	20

Code Number Checked: NA

Points Scored: NA

C. Nitrogen Pollutants: (check one) ☐ Ammonia ☐ Other: _____

Permit Limits: (check one)	*Nitrogen Equivalent*	Code	Points
☐	< 300 lbs/day	1	0
☐	300 to 1000 lbs/day	2	5
☐	> 1000 to 3000 lbs/day	3	15
☐	> 3000 lbs/day	4	20

Code Number Checked: NA

Points Scored: NA

Total Points Factor 3: NA

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this include any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above reference supply.

☐ YES; (If yes, check toxicity potential number below)

☐ NO; (If no, go to Factor 5)

Determine the *Human Health* potential from Appendix A. Use the same SIC doe and subcategory reference as in Factor 1. (Be sure to use the *Human Health* toxicity group column – check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
☐ No process waste streams	0	0	☐ 3.	3	0	☐ 7.	7	15
☐ 1.	1	0	☐ 4.	4	0	☐ 8.	8	20
☐ 2.	2	0	☐ 5.	5	5	☐ 9.	9	25
			☐ 6.	6	10	☐ 10.	10	30

Code Number Checked: NA

Total Points Factor 4: NA

NPDES PERMIT RATING WORK SHEET

FACTOR 5: Water Quality Factors

A. *Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-base federal effluent guidelines, or technology-base state effluent guidelines), or has a wasteload allocation been to the discharge*

	Code	Points
☐ YES	1	10
☐ NO	2	0

B. *Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?*

	Code	Points
☐ YES	1	0
☐ NO	2	5

C. *Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?*

	Code	Points
☐ YES	1	10
☐ NO	2	0

Code Number Checked: A NA B NA C NA

Points Factor 5: A NA + B NA + C NA = NA

FACTOR 6: Proximity to Near Coastal Waters

A. Base Score: Enter flow code here (from factor 2) _____

Check appropriate facility HPRI code (from PCS):

	HPRI#	Code	HPRI Score
☐	1	1	20
☐	2	2	0
☐	3	3	30
☐	4	4	0
☐	5	5	20

Enter the multiplication factor that corresponds to the flow code: _____

Flow Code	Multiplication Factor
11, 31, or 41	0.00
12, 32, or 42	0.05
13, 33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

HPRI code checked : NA

Base Score (HPRI Score): NA X (Multiplication Factor) NA = NA

B. Additional Points – NEP Program

For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

	Code	Points
☐	1	10
☐	2	0

C. Additional Points – Great Lakes Area of Concern

For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 area's of concern (see instructions)?

	Code	Points
☐	1	10
☐	2	0

Code Number Checked: A NA B NA C NA

Points Factor 6: A NA + B NA + C NA = NA

NPDES PERMIT RATING WORK SHEET

SCORE SUMMARY

Factor	Description	Total Points
1	Toxic Pollutant Potential	NA
2	Flows / Streamflow Volume	NA
3	Conventional Pollutants	NA
4	Public Health Impacts	NA
5	Water Quality Factors	NA
6	Proximity to Near Coastal Waters	NA
	TOTAL (Factors 1 through 6)	NA

S1. Is the total score equal to or grater than 80 [X] YES; (Facility is a Major) [ ] NO

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

[ ] NO

[ ] YES; (Add 500 points to the above score and provide reason below:

Reason: _____

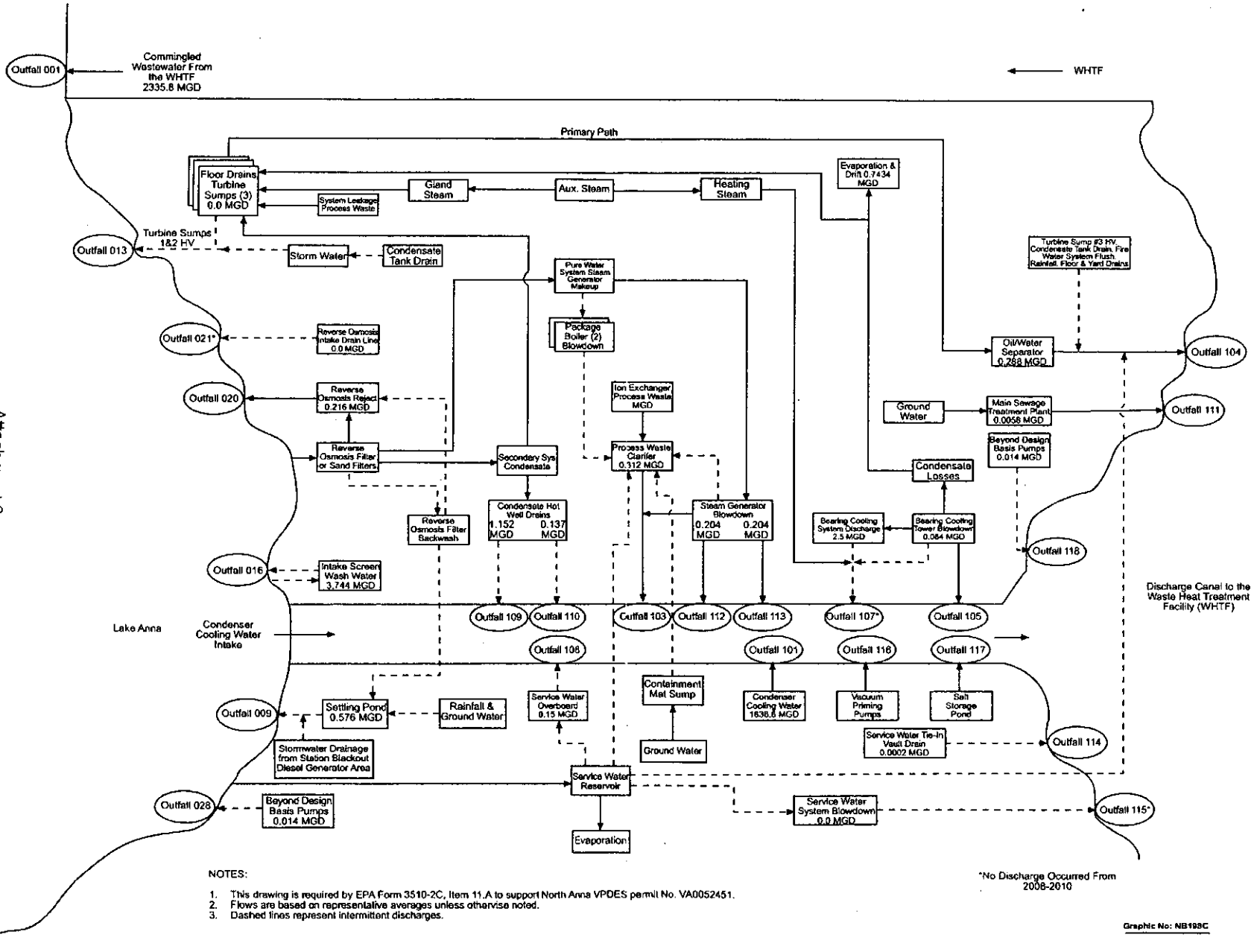
NEW SCORE : 600

OLD SCORE : 600

Permit Reviewer's Name : Susan Mackert

Phone Number: (703) 583-3853

Date: October 5, 2012



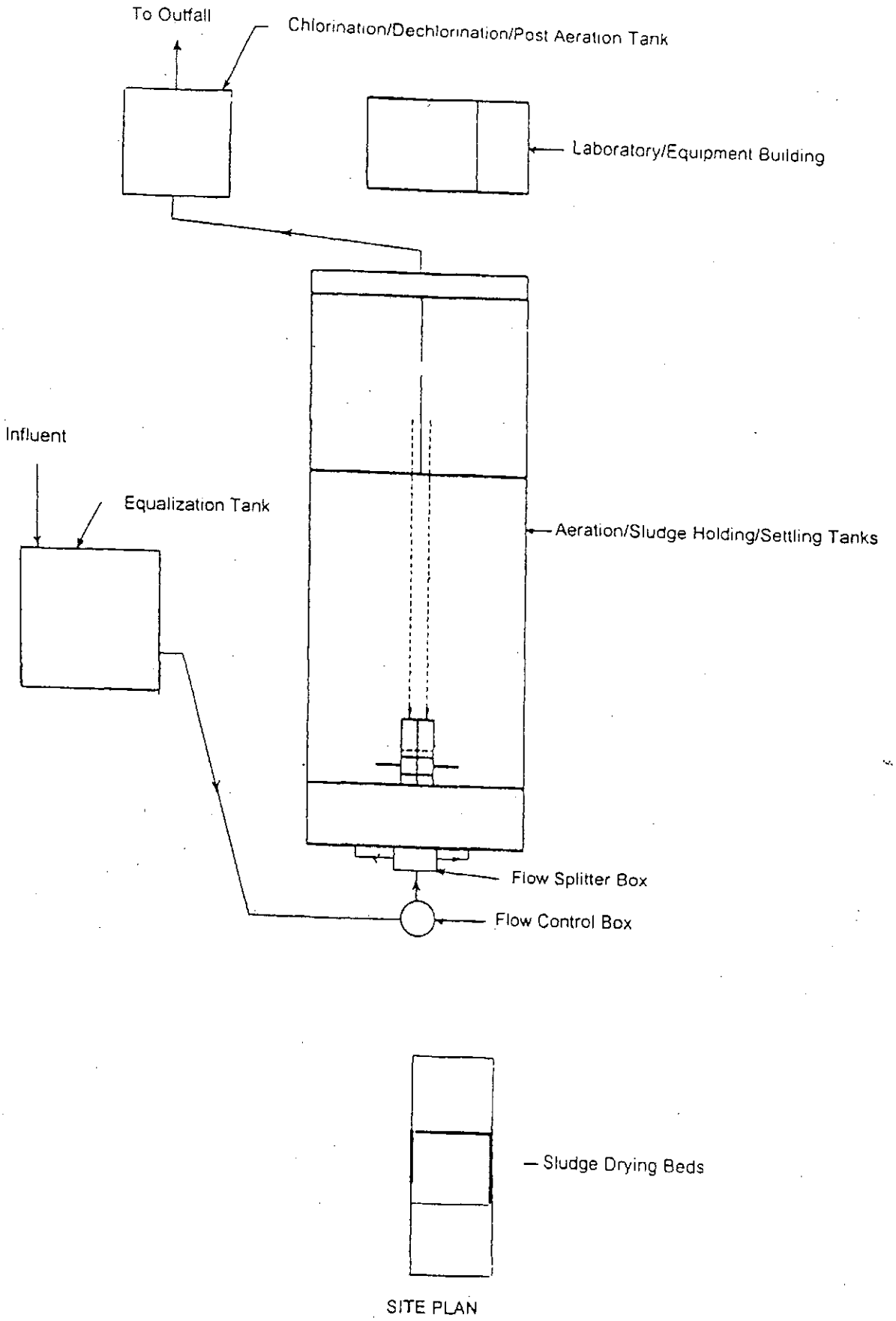
NOTES:

1. This drawing is required by EPA Form 3510-2C, Item 11.A to support North Anna VPDES permit No. VA0052451.
2. Flows are based on representative averages unless otherwise noted.
3. Dashed lines represent intermittent discharges.

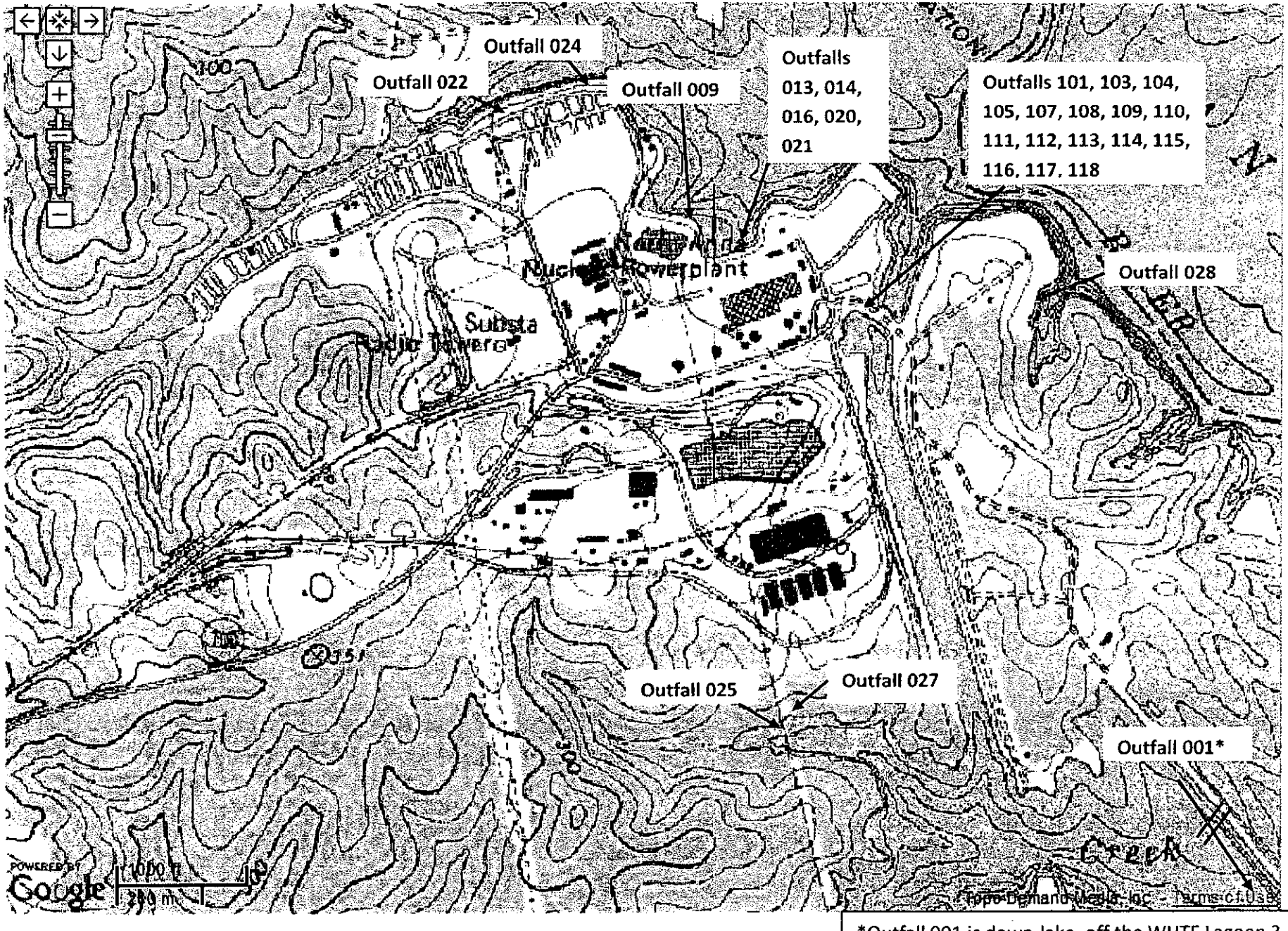
*No Discharge Occurred From 2008-2010

Graphic No: NB193C

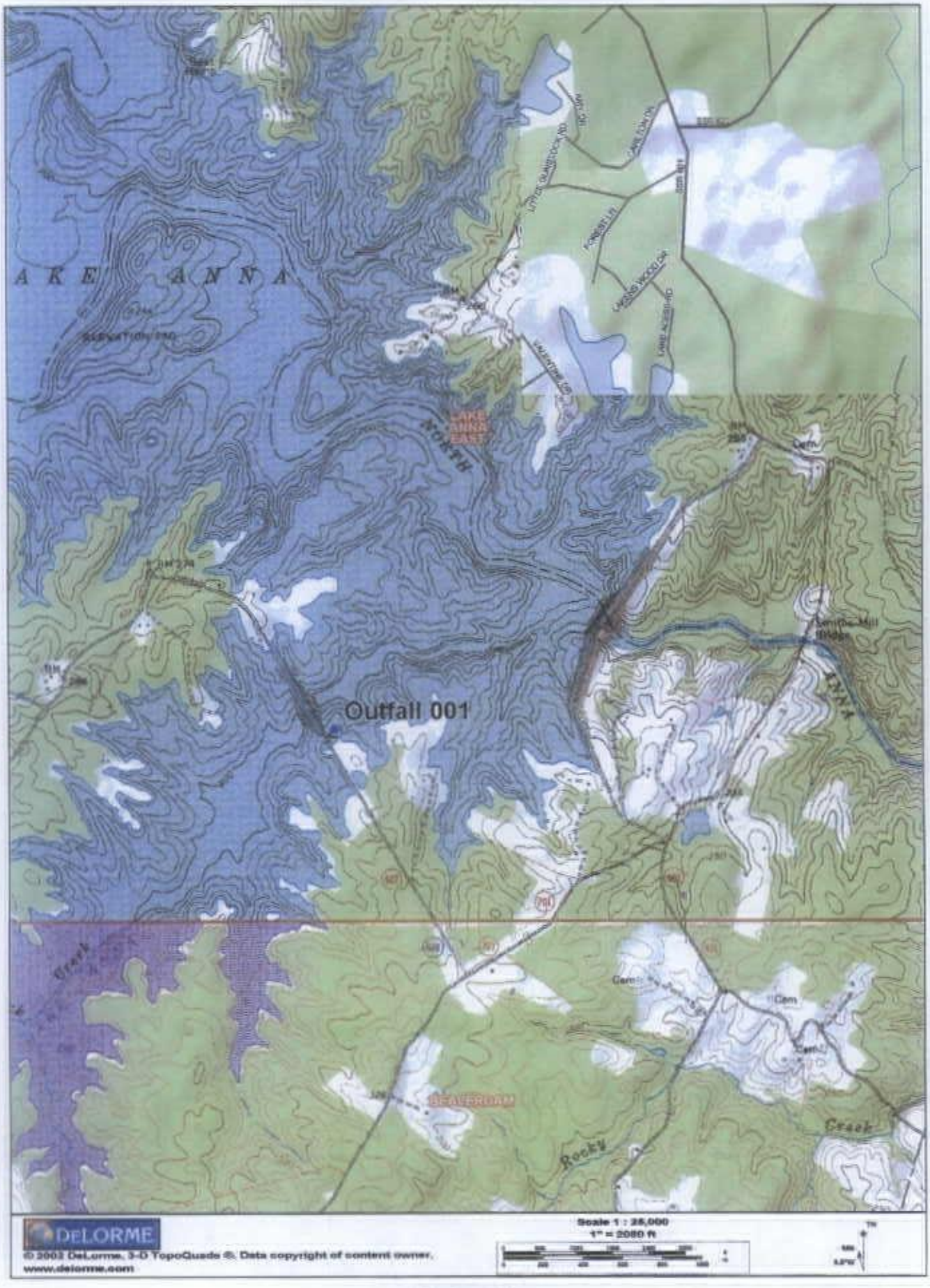
Attachment 2
Page 1 of 2


To Outfall
Chlorination/Dechlorination/Post Aeration Tank
Laboratory/Equipment Building
Influent
Equalization Tank
Aeration/Sludge Holding/Settling Tanks
Flow Splitter Box
Flow Control Box
Sludge Drying Beds

SITE PLAN



*Outfall 001 is down-lake, off the WHTF Lagoon 3 dam as depicted on URS topographic map (also included in this Attachment)


Outfall 001
LAKE ANNA EAST
NORTH
Rocky
Creek
DELORME
© 2002 DeLorme. 3-D TopoQuads ®. Data copyright of content owner.
www.delorme.com
Scale 1 : 25,000
1" = 2080 ft

4.3 Site Bulk Chemicals/ Materials

VA0052451, Part I, F.3.2.(b) Inventory of Exposed Materials. (SWPPP Cross Reference #13)

Chemical / Material Storage		
Storage Tank Type	**Storage Capacity (Gallons)**	**Secondary Containment (Gallons)**
Sodium Hypo chlorite **Map Key (1)**	330 Gallon Tote	Tote sets on Secondary Containment and under a canopy. Totes are replaced as needed.
Acti – Brom 1318 **Map Key (1)**	400 Gallon Tote	Tote sets on Secondary Containment and under a canopy. Totes are replaced as needed.
Sand **Map Key (2)**	Varies	Stored under roof with three walls and a tarp over the front. Unloaded in front of the bay via dump-truck, residue is swept into the pile.
Salt **Map Key (2)**	Varies	Stored under roof with three walls and a tarp over the front. Unloaded in front of the bay via dump-truck, residue is swept into the pile.
Laydown Area **Map Key (3)**	Varies	Graded Flat.
General Refuse **Map Key (4)**	Various Size Containers	Smaller "Trash Cans" are equipped with lids; larger dumpsters are strategically positioned in areas that minimize sheet-flow transport to storm water conveyances.
Dianodic DN2472 **Map Key (1)**	300 Gallon Tote	Tote sets on Secondary Containment and under a canopy. Totes are replaced as needed.

Chemical Containing Equipment		
Storage Tank Type	**Storage Capacity (Gallons)**	**Structural BMPs Secondary Containment (Gallons)**
Bearing Cooling Tower: - H130 – Biocide - Acti Brom 1318 - Sodium Hypo chlorite - Dianodic DN2472 **Map Key (1)**	25,000 GPM	Concrete Basin.

Chemical & Material Unloading & Transfer Facilities		
Unloading/Transfer Facility Name, Number	**Spill Potential (Source)**	**Structural BMPs Secondary Containment (Gallons)**
H-130 Biocide **Map Key (5)**	1,200 Gallon Tanker Truck Loads	Facility Personnel are required to be present during transfer operations. Catch pans are used under line connections.
H901G **Map Key(5)**	500 lb bags or 50lbs buckets	Delivered in bags and unloaded inside the building.
3D Trasar 3DT177 (Corrosion Inhibitor) **Map Key (5)**	200 Gallon Truck Deliveries	Facility Personnel are required to be present during transfer operations. Catch pans are used under line connections.
3D Trasar 3DT180 (Corrosion Inhibitor) **Map Key (5)**	200 Gallon Truck Deliveries	Facility Personnel are required to be present during transfer operations. Catch pans are used under line connections.

Numerous chemicals are used in minor and bulk amounts at the station. A list of the bulk chemicals employed is included below. Certain chemicals have multiple uses, and the stated purpose is not preclusive of other purposes or functions. Material Safety Data Sheets (MSDSs) will be provided upon request.

System	Chemical
Bearing Cooling Water	Nalco 7384 (zinc chloride) Flogard MS6208 PCL 713 (phosphate) Dianodic DN2472 Nalco 2894 (biocide) Acti-Brom 1318 (bromine) Sodium hypochlorite Calgon H-900 (biocide) Calgon EVAC (biocide) Cortec VPCI-337
Service Water Cooling Water	Calgon TRC-256 Nalco 3DT177 Nalco 3DT180 ONDEO H-130 Calgon H-901G Calgon H-300 Calgon Poly EZ 7736 AB Aquashade (dye) Potassium hydroxide Potassium chromate Potassium dichromate Ion exchange resin Nalcolyte 7134 Cortec VPCI-337
Condenser Hotwell	ETA (monoethanolamine) Hydrazine Ammonium hydroxide
Steam Generator Blowdown and Wet Layup	ETA (monoethanolamine) Hydrazine Ammonium hydroxide Morpholine AMP (amino methyl propanol) MPA (methoxypropylamine) DMA (dimethylarnine) Carbohydrazide
Station Chillers	CS Corrosion Inhibitor GE Inhibitor AZ8100 GE Corrshield MD4106 NALCO 7339
Water Purification	KLARAID IC1171 KLARAID CDP1339 KLARAID CDP1318 SPECTRUS NX106 SPECTRUS DT1404

MEMORANDUM

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

13901 Crown Court Woodbridge, VA 22193

SUBJECT: Reissuance Site Visit
Dominion – North Anna Power Station (VA0052451)

TO: Permit Reissuance File

FROM: Susan Mackert

DATE: July 11, 2012

A reissuance site visit was performed on June 7, 2012. Information provided in the facility's permit reapplication package dated April 9, 2012, and received April 12, 2012, is representative of actual site conditions observed during the site visit.

General Site Observations

The Dominion – North Anna Power Station is an existing nuclear power station. The facility utilizes two Westinghouse pressurized water reactors (Units 1 and 2) generating a combined 2046 MW total gross. Water needed for unit operations is withdrawn from Lake Anna utilizing a single intake structure (photo 1). Only those outfalls which were physically observed during the site visit are discussed below.

Outfall 001

Outfall 001 (photo 2) is located at Dike 3 of the Waste Heat Treatment Facility (WHTF). The discharge from Outfall 001 is primarily comprised of once through non-contact condenser cooling water from Unit 1 and Unit 2. Internal Outfalls 101, 103, 104, 105, 107, 108, 109, 110, 111, 112, 113, 114, 115, and storm water Outfall 025, all discharge to the WHTF, with final discharge through Outfall 001.

Outfall 009

Outfall 009 discharges to Lake Anna via a settling pond (photo 3). The settling pond consists of two ponds separated by an earthen dike. The first pond flows into the second by means of a standpipe in the corner farthest from the inflow area. The second pond is pumped intermittently over a taller earthen dike into Lake Anna when the water level in the pond reaches a specified level. The discharge from this outfall is comprised of groundwater, storm water, reverse osmosis unit backwash, bearing cooling tower water generated during maintenance activities, and ionics emergency shower wash post neutralization water.

It should be noted that Outfall 009 may be impacted by site separation activities associated with the proposed Unit 3.

Outfall 013

Outfall 013 discharges to Lake Anna (photo 4) via a two stage concrete catchment basin. The discharge from this outfall is comprised of water from plant condensers, bearing cooling water, and miscellaneous discharges of purified or raw lake water from various infrequent plant maintenance activities which is classified as low volume waste under Federal Effluent Guidelines, as well as storm water.

Outfall 014

Outfall 014 discharges to Lake Anna (photo 5). The discharge from this outfall is comprised of storm water from the western half of the turbine building which has no industrial activities taking place within the defined drainage area. The drainage area, approximately 2 acres, is roughly 1.5 acres of impervious surfaces.

Outfall 016

Outfall 016 discharges to Lake Anna (photo 1). The discharge from this outfall is comprised of non-process lake water used to wash the traveling screens at the intake structure.

Outfall 020

Outfall 020 discharges to Lake Anna (photo 4). The discharge from this outfall is comprised of the industrial wastewater from the reverse osmosis treatment system used to purify water withdrawn from Lake Anna.

Outfall 021

Outfall 021 discharges to Lake Anna (photo 4). The discharge from this outfall is from a drain line associated with the pipe which carries untreated lake water to the reverse osmosis trailers. This outfall would only be used in both units were offline during the winter with no water was being purified, to keep the water in the drain line from freezing and the pipe splitting.

Storm Water Outfall 023

Outfall 023 discharges to Lake Anna (photo 6). The discharge from this outfall is comprised of storm water runoff from a small, highly vegetated area which houses the facility's storage building for hazardous wastes. The building is completely enclosed so there is no reasonable potential for storm water contamination from the materials being stored within the building. The drainage area, approximately six acres, has less than one acre of impervious area.

With this reissuance Dominion has asked that Outfall 023 be removed from the permit. Storm water runoff from this drainage area would travel by sheet flow through an extensive vegetative buffer strip prior to any discharge to Lake Anna. Based on the lack of industrial activity within the drainage area and the fact sheet flow (a non-point source discharge) is not addressed within VPDES permits, Outfall 023 will be removed from the permit with this reissuance. It is staff's best professional judgement that there is no reasonable potential for storm water from this outfall to impact the water quality of Lake Anna.

Storm Water Outfall 025

Outfall 025 discharges to the Waste Heat Treatment Facility (photos 7 - 8). The discharge from this outfall is comprised of storm water runoff from warehouse facilities, an outdoor laydown area, and some small utility buildings.

Storm Water Outfall 026

Outfall 026 discharges to Lake Anna (photo 9). The discharge from this outfall is comprised of storm water runoff from a highly vegetated area with no industrial activity taking place. The drainage area, approximately 61 acres, has no impervious area (photos 10 – 11).

With this reissuance Dominion has asked that Outfall 026 be removed from the permit. Storm water runoff from this drainage area would travel by sheet flow through an extensive vegetative buffer strip prior to any discharge to Lake Anna. Based on the lack of industrial activity within the drainage area and the fact sheet flow (a non-point source discharge) is not addressed within VPDES permits, Outfall 026 will be removed from the permit with this reissuance. It is staff's best professional judgement that there is no reasonable potential for storm water from this outfall to impact the water quality of Lake Anna.

Internal Outfall 104

Outfall 104 (photo 12) discharges to the WHTF via the main discharge canal (photos 13 - 14). The discharge from this outfall is comprised of water from fire water system drain lines, miscellaneous discharges of purified or raw lake water from various infrequent plant maintenance activities, chiller water, service water, condensate storage tanks, above ground storage tank containment sump, demineralizer sump, plant condensers, bearing cooling water, and temporary package boiler blowdown which is classified as low volume waste under Federal Effluent Guidelines, as well as storm water.

Internal Outfall 105

Outfall 105 discharges to the WHTF via the main discharge canal. The discharge from this outfall is comprised of continuous bearing cooling tower blowdown (photo 15) and discharges from intermittent lake-to-lake operations which is classified as low volume waste under the Federal Effluent Guidelines.

Internal Outfall 111

Outfall 111 discharges to the WHTF via the main discharge canal (photo 16). The discharge from this outfall is comprised of flow from the facility's 0.030 MGD wastewater treatment plant (photos 17 - 18).

Additional Staff Comments

The following table provides a list of outfalls which were not observed during the site visit due to accessibility:

Table 1 – Outfalls Not Observed	
Internal Outfalls	Storm Water Outfalls
101, 103, 107, 108, 109, 110, 112, 113, 114, 115	022, 024

Photo 1. Intake structure. The arrow points to Outfall 016.

Photo 2. Discharge from WHTF at Outfall 001 to Lake Anna.

Photo 3. A portion of the settling pond associated with Outfall 009.

Photo 4. Outfall 013, Outfall 020, and Outfall 021.

Photo 5. Outfall 014.

Photo 6. Drainage area and discharge path to Outfall 023. Flow is in the direction of the arrow towards Lake Anna.

Photo 7. Outfall 025.

Photo 8. The storm water flow from Outfall 025 (photo 7) flows towards the WHTF in the direction of the arrow.

Photo 9. Outfall 026. The storm water flow from this outfall, towards Lake Anna, is in the direction of the arrow.

Photo 10. Drainage area for Outfall 026 (photo 9).

Photo 11. Drainage area for Outfall 026 (photo 9).

Photo 12. Outfall 104.

Photo 13. Head of discharge canal which leads to the Waste Heat Treatment Facility.

Photo 14. Discharge canal. Flow towards the Waste Heat Treatment Facility is in the direction of the arrow.

Photo 15. Bearing cooling tower associated with discharges from Outfall 105.

Photo 16. Outfall 111 enters the head of the discharge canal from the facility's wastewater treatment plant via a subsurface pipe.

Photo 17. Sampling point for Outfall 111.

Photo 18. Wastewater treatment plant.

MEMORANDUM

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

13901 Crown Court Woodbridge, VA 22193

SUBJECT: Reissuance Site Visit
Dominion – North Anna Power Station (VA0052451)

TO: Permit Reissuance File

FROM: Susan Mackert

DATE: September 4, 2013

General Site Observations

An additional site visit was performed on June 25, 2013. Since the previous site visit conducted in 2012, two new outfalls are proposed for inclusion in the draft permit. Only those outfalls are described below.

Outfall 116 (Vacuum Priming Pump)

Three vacuum priming pumps are located within the vacuum priming house (Photo 1) which is located on the discharge structure at the head of the discharge canal (Photo 2). The pumps draw a vacuum on the circulating water tunnel to provide a motive force for the water being discharged through the tunnel. Water is pulled from the discharge canal, run through the pumps to create a vacuum, and is then drained back to the discharge canal. No chemical treatment or process exposure occurs in the vacuum priming house.

Outfall 117 (Salt Storage Pond)

To provide for maintenance of paved surfaces during winter months, a new enclosed salt and sand storage facility has been constructed as part of site separation activities (Photo 3). As such, stock piles of salt and sand are not exposed to storm water. However, residual salt and sand from loading and unloading activities would have the potential to be exposed to storm water and/or snow melt conditions. The area around the storage facility is paved and graded such that any storm water/snow melt flow would be directed to a lined 220,000 gallon retention basin. The retention basin is designed without a discharge structure and under normal conditions is not expected to discharge (Photos 4 – 5).

Photo 1. The arrow points to the vacuum priming house. Photo courtesy of Dominion.

Photo 2. Discharge structure. Photo courtesy of Dominion.

Photo 3. Salt and sand storage facility.

Photo 4. Combined with Photo 5 shows salt storage pond.

Photo 5. Combined with Photo 4 shows salt storage pond.

Mackert, Susan (DEQ)

From: Carlson, Jennifer (DEQ)
Sent: Wednesday, May 08, 2013 9:54 AM
To: Mackert, Susan (DEQ)
Cc: Thomas, Bryant (DEQ)
Subject: Revised North Anna Planning Statement
Attachments: VA0052451 Planning Statement_updated05082013.docx

Hi Susan,

Please find the revised planning statement for North Anna attached. Table A has been revised to better define the area of Lake Anna with the mercury impairment.

Jen

Jennifer Carlson
Water Resources Planner
Northern Regional Office
Virginia Department of Environmental Quality
13901 Crown Court
Woodbridge, VA 22193
Phone: 703-583-3859
jennifer.carlson@deq.virginia.gov

To:	Susan Mackert
From:	Jennifer Carlson
Date:	May 8, 2013
Subject:	Planning Statement for Dominion – North Anna Power Station
Permit Number:	VA0052451

Information for Outfalls: See table at end of document

Discharge Type:
Discharge Flow:
Receiving Stream:
Latitude / Longitude:
Rivermile:
Streamcode:
Waterbody:
Water Quality Standards:
Drainage Area:

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

   A. Outfalls 009, 013, 016, 020, 021, 014, 022, 024 discharge into the upper segment of the lacustrine area of Lake Anna. The nearest downstream DEQ ambient monitoring station is 8-NAR043.00, located mid lake, approximately 1.8 miles downstream from the outfalls. The following is the water quality summary for this portion of Lake Anna, as taken from the Draft 2012 Integrated Assessment*:

   Class III, Section 3.

   DEQ lake monitoring stations 8-NAR037.22, 8-NAR043.00, and 8-NAR044.68. Citizen monitoring stations 8NAR-2-LACA, 8NAR-3-LACA, and 8NAR-4-LACA.

   The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory and VA DEQ fish tissue monitoring. Additionally, an excursion above the tissue value (TV) of 300 parts per billion (ppb) for mercury (Hg) was recorded in tissue from one specie (bluegill sunfish) in 2006 at monitoring station 8-NAR044.68, noted by an observed effect.

   The aquatic life, recreation, and wildlife uses are considered fully supporting. However, an excursion above the freshwater consensus-based sediment screening value (SV) of 149 parts per million (ppm) for copper (Cu) was recorded in 2006 at monitoring station 8-NAR044.68, noted by an observed effect for the aquatic life use. Nutrients were assessed as fully supporting based on two complete monitoring years (2009 and 2010) for chlorophyll a.

B. Outfall 001 discharges into the lower segment of the lacustrine area of Lake Anna. The nearest downstream DEQ ambient monitoring station is 8-NAR034.92, located about 100 yards from the dam, approximately 0.9 miles downstream from Outfall 001. The following is the water quality summary for this portion of Lake Anna, as taken from the Draft 2012 Integrated Assessment*:

Class III, Section 3.

DEQ fish tissue/sediment and lake monitoring station 8-NAR034.92, approximately 0.5 rivermile upstream from the dam near Route 622, and lake monitoring station 8-NAR036.78. Citizen monitoring station 8NAR-1-LACA.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory and VA DEQ fish tissue monitoring data. Additionally, the fish consumption use is also considered impaired due sufficient excursions above the fish tissue value (TV) for mercury (Hg) in fish tissue.

The aquatic life, recreation, and wildlife uses are considered fully supporting. Nutrients were assessed as fully supporting based on two complete monitoring years (2009 and 2010) for chlorophyll a.

** Virginia's Draft 2012 Integrated Report (IR) has been through the public comment period and reviewed by EPA. The 2012 IR is currently awaiting final approval.*

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

Yes.

Table A. 303(d) Impairment and TMDL information for the receiving stream segment

Waterbody Name	Impaired Use	Cause	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Impairment Information in the Draft 2012 Integrated Report*						
Lake Anna (entire lake)	Fish Consumption	PCBs	No	N/A	N/A	2014
Lake Anna (lower lacustrine^)	Fish Consumption	Mercury	No	N/A	N/A	2022

** Virginia's Draft 2012 Integrated Report (IR) has been through the public comment period and reviewed by EPA. The 2012 IR is currently awaiting final approval.*

^The lower lacustrine portion of Lake Anna consists of the 1562 acre area of the lake bordered by the dam, dike 3 and dike 2.

3. Are there any downstream 303(d) listed impairments that are relevant to this discharge? If yes, please fill out Table B.

No.

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

   Lake Anna is listed with a PCB impairment. Due to this PCB impairment, this facility is a candidate for low-level PCB monitoring, based upon its designation as a major industrial facility. DEQ staff recommends that this facility perform low-level PCB monitoring during the upcoming permit cycle. It is recommended that this facility collect 1 wet sample and 1 dry sample using EPA Method 1668, which is capable of detecting low-level concentrations for all 209 PCB congeners. Monitoring for PCBs should occur at outfall locations where the discharge may contain contamination from the handling or use of PCBs within the outfall drainage area, including areas that were sites of PCB spills in the past. During the interim period while EPA is undergoing the rulemaking process to promulgate EPA Method 1668C within 40 CFR, rather than requiring the most recent version of 1668 be utilized, Method 1668 revisions A, B, C or other revisions issued by EPA prior to final promulgation are acceptable for use.

   There is a completed downstream TMDL for the aquatic life use impairment for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

   There are no public water supply intakes within a 5 mile radius of any of the listed outfalls.

Dominion – North Anna Power Station Outfall Descriptions						
Receiving Stream Name	**Streamcode and Waterbody**	**Water Quality Standards**	**Outfall Number**	**Latitude & Longitude**	**Average Flow (MGD)**	**Rivermile**
Lake Anna	8-NAR ---- VAN-F07L	Class III Section 3	001	38° 00' 30.2" -77° 43' 43"	2335.8	35.09
			009	38° 03' 43.6" -77° 47' 31"	0.576	44.50
			013	38° 03' 43.6" -77° 47' 24.4"	Intermittent	44.45
			016	38° 03' 43.6" -77° 47' 24.4"	3.744	44.45
			020	38° 03' 43.6" -77° 47' 24.4"	0.216	44.45
			021	38° 03' 43.6" -77° 47' 24.4"	Intermittent	44.45
			014	38° 03' 42.7" -77° 47' 28.6"	Variable	44.49
			022	38° 03' 52.5" -77° 47' 52.8"	Variable	44.62
			024	38° 03' 55.2" -77° 47' 38.4"	Variable	44.56

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Dominion - North Anna Permit No.: VA0052451

Receiving Stream: Lake Anna Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	mg/L
90% Temperature (Annual) =	deg C
90% Temperature (Wet season) =	deg C
90% Maximum pH =	SU
10% Maximum pH =	SU
Tier Designation (1 or 2) =	1
Public Water Supply (PWS) Y/N? =	n
Trout Present Y/N? =	n
Early Life Stages Present Y/N? =	y

Stream Flows

1Q10 (Annual) =	0 MGD
7Q10 (Annual) =	0 MGD
30Q10 (Annual) =	0 MGD
1Q10 (Wet season) =	0 MGD
30Q10 (Wet season)	0 MGD
30Q5 =	0 MGD
Harmonic Mean =	0 MGD

Mixing Information

Annual - 1Q10 Mix =	100 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	100 %
- 30Q10 Mix =	100 %

Effluent Information

Mean Hardness (as CaCO3) =	25 mg/L
90% Temp (Annual) =	33 deg C
90% Temp (Wet season) =	deg C
90% Maximum pH =	7.7 SU
10% Maximum pH =	SU
Discharge Flow =	2335.8 MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E+00
Acrylonitrile [C]	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E+00
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	3.0E+00	--	na	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	1.44E+01	1.09E+00	na	--	1.44E+01	1.09E+00	na	--	--	--	--	--	--	--	--	--	1.44E+01	1.09E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	1.44E+01	3.58E+00	na	--	1.44E+01	3.58E+00	na	--	--	--	--	--	--	--	--	--	1.44E+01	3.58E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02
Benzidine [C]	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E-03
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Bis2-Chloroethyl Ether [C]	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E+01
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
Cadmium	0	8.2E-01	3.8E-01	na	--	8.2E-01	3.8E-01	na	--	--	--	--	--	--	--	--	--	8.2E-01	3.8E-01	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E-03
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	1.8E+02	2.4E+01	na	--	1.8E+02	2.4E+01	na	--	--	--	--	--	--	--	--	--	1.8E+02	2.4E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene[C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E-02
Copper	0	3.6E+00	2.7E+00	na	--	3.6E+00	2.7E+00	na	--	--	--	--	--	--	--	--	--	3.6E+00	2.7E+00	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E+04
DDD[C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E-03
DDE[C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E-03
DDT[C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	--
Dibenz(a,h)anthracene[C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E+02
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E-01
Dichlorobromomethane[C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E+02
1,2-Dichloroethane[C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
1,3-Dichloropropene[C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E+02
Dieldrin[C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E-04
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
2,4-Dinitrotoluene[C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	na	3.4E+01
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E-08
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E-02
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	na	3.0E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor [c]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E-04
Heptachlor Epoxide[c]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E-04
Hexachlorobenzene[c]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E-03
Hexachlorobutadiene[c]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hexachlorocyclohexane Alpha-BHC[c]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E-02
Hexachlorocyclohexane Beta-BHC[c]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E-01
Hexachlorocyclohexane Gamma-BHC[c] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Hexachloroethane[c]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene [c]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone[c]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	2.0E+01	2.3E+00	na	--	2.0E+01	2.3E+00	na	--	--	--	--	--	--	--	--	--	2.0E+01	2.3E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Methylene Chloride [c]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	5.6E+01	6.3E+00	na	4.6E+03	5.6E+01	6.3E+00	na	4.6E+03	--	--	--	--	--	--	--	--	5.6E+01	6.3E+00	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E+02
N-Nitrosodimethylamine[c]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
N-Nitrosodiphenylamine[c]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodi-n-propylamine[c]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E+00
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB Total[c]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E-04
Pentachlorophenol [c]	0	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	--	--	--	--	--	--	--	--	7.7E-03	5.9E-03	na	3.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E+05
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	2.0E+01	5.0E+00	na	4.2E+03
Silver	0	3.2E-01	--	na	--	3.2E-01	--	na	--	--	--	--	--	--	--	--	--	3.2E-01	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	--	--	na	4.0E+01
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	--	--	na	4.7E-01
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	--	--	na	6.0E+03
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	7.3E-01	2.0E-04	na	2.8E-03
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	4.6E-01	7.2E-02	na	--
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	--	--	na	7.0E+01
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	3.0E+02
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	na	2.4E+01
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	na	2.4E+01
Zinc	0	3.6E+01	3.6E+01	na	2.6E+04	3.6E+01	3.6E+01	na	2.6E+04	--	--	--	--	--	--	--	--	3.6E+01	3.6E+01	na	2.6E+04

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	2.3E-01
Chromium III	1.4E+01
Chromium VI	6.4E+00
Copper	1.5E+00
Iron	na
Lead	1.4E+00
Manganese	na
Mercury	4.6E-01
Nickel	3.8E+00
Selenium	3.0E+00
Silver	1.3E-01
Zinc	1.4E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

VA0052451 Dominion - North Anna Power Station

Due	Outfall	Rec'd	Parameter Description	CONC MIN	Lim Min	CONC MAX	Lim Max
9/10/12	001	9/6/12	pH (S.U.)	7.18	6.0	7.76	9.0
8/10/12	001	8/9/12	pH (S.U.)	7.00	6.0	7.21	9.0
7/10/12	001	7/26/12	pH (S.U.)	6.95	6.0	7.08	9.0
6/10/12	001	6/8/12	pH (S.U.)	6.94	6.0	7.03	9.0
5/10/12	001	5/9/12	pH (S.U.)	6.81	6.0	7.11	9.0
4/10/12	001	4/9/12	pH (S.U.)	6.80	6.0	7.37	9.0
3/10/12	001	3/7/12	pH (S.U.)	6.84	6.0	7.07	9.0
2/10/12	001	2/8/12	pH (S.U.)	6.87	6.0	6.98	9.0
1/10/12	001	1/10/12	pH (S.U.)	6.70	6.0	7.02	9.0
12/10/11	001	12/8/11	pH (S.U.)	6.70	6.0	6.85	9.0
11/10/11	001	11/7/11	pH (S.U.)	6.74	6.0	6.87	9.0
10/10/11	001	10/6/11	pH (S.U.)	6.84	6.0	8.13	9.0
9/10/11	001	9/9/11	pH (S.U.)	7.64	6.0	8.29	9.0
8/10/11	001	8/4/11	pH (S.U.)	7.10	6.0	7.27	9.0
7/10/11	001	7/7/11	pH (S.U.)	6.92	6.0	7.18	9.0
6/10/11	001	6/7/11	pH (S.U.)	6.83	6.0	7.07	9.0
5/10/11	001	5/5/11	pH (S.U.)	6.78	6.0	6.97	9.0
4/10/11	001	4/7/11	pH (S.U.)	6.76	6.0	6.98	9.0
3/10/11	001	3/8/11	pH (S.U.)	7.03	6.0	7.40	9.0
2/10/11	001	2/9/11	pH (S.U.)	6.92	6.0	7.43	9.0
1/10/11	001	1/7/11	pH (S.U.)	6.91	6.0	7.01	9.0
12/10/10	001	12/9/10	pH (S.U.)	6.83	6.0	6.92	9.0
11/10/10	001	11/9/10	pH (S.U.)	6.73	6.0	7.88	9.0
10/10/10	001	10/7/10	pH (S.U.)	7.09	6.0	8.37	9.0
9/10/10	001	9/9/10	pH (S.U.)	7.13	6.0	7.85	9.0
8/10/10	001	8/6/10	pH (S.U.)	7.03	6.0	7.15	9.0
7/10/10	001	7/8/10	pH (S.U.)	6.97	6.0	7.14	9.0
6/10/10	001	6/9/10	pH (S.U.)	6.85	6.0	7.05	9.0
5/10/10	001	5/10/10	pH (S.U.)	6.56	6.0	7.16	9.0
4/10/10	001	4/8/10	pH (S.U.)	6.89	6.0	7.10	9.0
3/10/10	001	3/9/10	pH (S.U.)	7.02	6.0	7.21	9.0
2/10/10	001	2/11/10	pH (S.U.)	7.02	6.0	7.37	9.0
1/10/10	001	1/13/10	pH (S.U.)	7.02	6.0	7.19	9.0
12/10/09	001	12/10/09	pH (S.U.)	6.93	6.0	7.12	9.0
11/10/09	001	11/12/09	pH (S.U.)	7.20	6.0	8.26	9.0
10/10/09	001	10/9/09	pH (S.U.)	7.33	6.0	8.15	9.0
9/10/09	001	9/10/09	pH (S.U.)	7.42	6.0	7.87	9.0
8/10/09	001	8/11/09	pH (S.U.)	7.15	6.0	7.32	9.0
7/10/09	001	7/13/09	pH (S.U.)	7.24	6.0	7.24	9.0
6/10/09	001	6/9/09	pH (S.U.)	7.14	6.0	7.34	9.0
5/10/09	001	5/8/09	pH (S.U.)	7.12	6.0	7.27	9.0

VA0052451 Dominion - North Anna Power Station

Due	Outfall	Rec'd	Parameter Description	CONC MIN	Lim Min	CONC MAX	Lim Max
4/10/09	001	4/10/09	pH (S.U.)	7.24	6.0	7.48	9.0
3/10/09	001	3/10/09	pH (S.U.)	7.06	6.0	7.28	9.0
2/10/09	001	2/10/09	pH (S.U.)	6.85	6.0	7.28	9.0
1/10/09	001	1/12/09	pH (S.U.)	6.95	6.0	7.25	9.0
12/10/08	001	12/11/08	pH (S.U.)	7.01	6.0	7.20	9.0
11/10/08	001	11/10/08	pH (S.U.)	7.80	6.0	8.29	9.0
10/10/08	001	10/10/08	pH (S.U.)	7.29	6.0	7.57	9.0
9/10/08	001	9/11/08	pH (S.U.)	7.42	6.0	8.25	9.0
8/10/08	001	8/11/08	pH (S.U.)	7.14	6.0	7.52	9.0
7/10/08	001	7/11/08	pH (S.U.)	7.15	6.0	7.25	9.0
6/10/08	001	6/10/08	pH (S.U.)	7.17	6.0	7.23	9.0
5/10/08	001	5/8/08	pH (S.U.)	7.22	6.0	7.37	9.0
4/10/08	001	4/8/08	pH (S.U.)	7.20	6.0	7.34	9.0
3/10/08	001	3/10/08	pH (S.U.)	7.08	6.0	7.30	9.0
2/10/08	001	2/11/08	pH (S.U.)	7.15	6.0	7.35	9.0

90% pH = 7.7 S.U.

VA0052451 Dominion - North Anna Power Station

Due	Outfall	Rec'd	Parameter Description	CONC AVG	Lim Avg	CONC MAX	Lim Max
9/10/12	001	9/6/12	TEMPERATURE, WATER (DEG. C)	33.1	NL	34.1	NL
8/10/12	001	8/9/12	TEMPERATURE, WATER (DEG. C)	33.7	NL	34.3	NL
7/10/12	001	7/26/12	TEMPERATURE, WATER (DEG. C)	29.8	NL	30.7	NL
6/10/12	001	6/8/12	TEMPERATURE, WATER (DEG. C)	26.0	NL	30.0	NL
5/10/12	001	5/9/12	TEMPERATURE, WATER (DEG. C)	19.6	NL	20.7	NL
4/10/12	001	4/9/12	TEMPERATURE, WATER (DEG. C)	17.5	NL	19.7	NL
3/10/12	001	3/7/12	TEMPERATURE, WATER (DEG. C)	14.3	NL	14.8	NL
2/10/12	001	2/8/12	TEMPERATURE, WATER (DEG. C)	13.0	NL	14.4	NL
1/10/12	001	1/10/12	TEMPERATURE, WATER (DEG. C)	15.7	NL	16.4	NL
12/10/11	001	12/8/11	TEMPERATURE, WATER (DEG. C)	14.9	NL	16.3	NL
11/10/11	001	11/7/11	TEMPERATURE, WATER (DEG. C)	20.3	NL	21.8	NL
10/10/11	001	10/6/11	TEMPERATURE, WATER (DEG. C)	25.8	NL	28.2	NL
9/10/11	001	9/9/11	TEMPERATURE, WATER (DEG. C)	33.6	NL	35.2	NL
8/10/11	001	8/4/11	TEMPERATURE, WATER (DEG. C)	33.9	NL	35.1	NL
7/10/11	001	7/7/11	TEMPERATURE, WATER (DEG. C)	31.2	NL	32.0	NL
6/10/11	001	6/7/11	TEMPERATURE, WATER (DEG. C)	25.8	NL	28.0	NL
5/10/11	001	5/5/11	TEMPERATURE, WATER (DEG. C)	20.6	NL	23.5	NL
4/10/11	001	4/7/11	TEMPERATURE, WATER (DEG. C)	16.2	NL	17.9	NL
3/10/11	001	3/8/11	TEMPERATURE, WATER (DEG. C)	12.5	NL	13.6	NL
2/10/11	001	2/9/11	TEMPERATURE, WATER (DEG. C)	10.7	NL	11.4	NL
1/10/11	001	1/7/11	TEMPERATURE, WATER (DEG. C)	12.5	NL	13.8	NL
12/10/10	001	12/9/10	TEMPERATURE, WATER (DEG. C)	18.6	NL	19.3	NL
11/10/10	001	11/9/10	TEMPERATURE, WATER (DEG. C)	20.8	NL	22.1	NL
10/10/10	001	10/7/10	TEMPERATURE, WATER (DEG. C)	30.1	NL	33.3	NL
9/10/10	001	9/9/10	TEMPERATURE, WATER (DEG. C)	32.7	NL	33.2	NL
8/10/10	001	8/6/10	TEMPERATURE, WATER (DEG. C)	33.4	NL	34.2	NL
7/10/10	001	7/8/10	TEMPERATURE, WATER (DEG. C)	31.3	NL	33.7	NL
6/10/10	001	6/9/10	TEMPERATURE, WATER (DEG. C)	25.0	NL	26.7	NL
5/10/10	001	5/10/10	TEMPERATURE, WATER (DEG. C)	20.1	NL	21.3	NL
4/10/10	001	4/8/10	TEMPERATURE, WATER (DEG. C)	15.2	NL	18.1	NL
3/10/10	001	3/9/10	TEMPERATURE, WATER (DEG. C)	10.3	NL	10.7	NL
2/10/10	001	2/11/10	TEMPERATURE, WATER (DEG. C)	11.4	NL	12.9	NL
1/10/10	001	1/13/10	TEMPERATURE, WATER (DEG. C)	14.2	NL	17.6	NL
12/10/09	001	12/10/09	TEMPERATURE, WATER (DEG. C)	20.1	NL	21.1	NL
11/10/09	001	11/12/09	TEMPERATURE, WATER (DEG. C)	24.2	NL	27.2	NL
10/10/09	001	10/9/09	TEMPERATURE, WATER (DEG. C)	29.7	NL	30.3	NL
9/10/09	001	9/10/09	TEMPERATURE, WATER (DEG. C)	33.0	NL	33.4	NL
8/10/09	001	8/11/09	TEMPERATURE, WATER (DEG. C)	31.7	NL	32.4	NL
7/10/09	001	7/13/09	TEMPERATURE, WATER (DEG. C)	31	NL	31	NL
6/10/09	001	6/9/09	TEMPERATURE, WATER (DEG. C)	25.2	NL	27.9	NL
5/10/09	001	5/8/09	TEMPERATURE, WATER (DEG. C)	19.8	NL	23.7	NL
4/10/09	001	4/10/09	TEMPERATURE, WATER (DEG. C)	14.1	NL	15.5	NL

VA0052451 Dominion - North Anna Power Station

Due	Outfall	Rec'd	Parameter Description	CONC AVG	Lim Avg	CONC MAX	Lim Max
3/10/09	001	3/10/09	TEMPERATURE, WATER (DEG. C)	12.3	NL	13.0	NL
2/10/09	001	2/10/09	TEMPERATURE, WATER (DEG. C)	11.5	NL	12.9	NL
1/10/09	001	1/12/09	TEMPERATURE, WATER (DEG. C)	13.6	NL	14.3	NL
12/10/08	001	12/11/08	TEMPERATURE, WATER (DEG. C)	16.9	NL	18.6	NL
11/10/08	001	11/10/08	TEMPERATURE, WATER (DEG. C)	23.5	NL	24.3	NL
10/10/08	001	10/10/08	TEMPERATURE, WATER (DEG. C)	29.4	NL	31.3	NL
9/10/08	001	9/11/08	TEMPERATURE, WATER (DEG. C)	31.9	NL	33.3	NL
8/10/08	001	8/11/08	TEMPERATURE, WATER (DEG. C)	32.3	NL	33.9	NL
7/10/08	001	7/11/08	TEMPERATURE, WATER (DEG. C)	31.0	NL	32.2	NL
6/10/08	001	6/10/08	TEMPERATURE, WATER (DEG. C)	24.3	NL	26.1	NL
5/10/08	001	5/8/08	TEMPERATURE, WATER (DEG. C)	19.3	NL	21.9	NL
4/10/08	001	4/8/08	TEMPERATURE, WATER (DEG. C)	16.2	NL	17.3	NL
3/10/08	001	3/10/08	TEMPERATURE, WATER (DEG. C)	13.2	NL	13.6	NL
2/10/08	001	2/11/08	TEMPERATURE, WATER (DEG. C)	13.1	NL	15.3	NL

90% Temperature = 33°C

5/24/2013 7:45:19 AM

Facility = Dominion - North Anna Power Station
Chemical = Chlorine
Chronic averaging period = 4
WLAa = 0.019
WLAc = 0.011
Q.L. = 0.1
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = .2
Variance = .0144
C.V. = 0.6
97th percentile daily values = .486683
97th percentile 4 day average = .332758
97th percentile 30 day average= .241210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 1.60883226245855E-02
Average Weekly limit = 1.60883226245855E-02
Average Monthly LImit = 1.60883226245855E-02

The data are:

0.2

COMMONWEALTH of VIRGINIA

Office of the Attorney General

Robert F. McDonnell
Attorney General

900 East Main Street
Richmond, Virginia 23219
804-786-2071
FAX 804-786-1991
Virginia Relay Services
800-828-1120
7-1-1

November 30, 2006

Mr. David K. Paylor
Director, Department of Environmental Quality
629 East Main Street
Richmond, Virginia 23219

Dear Mr. Paylor:

I am responding to your request for an official advisory opinion in accordance with § 2.2-505 of the *Code of Virginia*.

Issue Presented

You ask whether the State Water Control Board can by permit impose thermal effluent limitations on the discharge by Dominion Nuclear North Anna, LLC, from its reactors at its North Anna Power Station into a series of connected cooling lagoons.

Response

It is my opinion that the State Water Control Board does not have the legal authorization to impose limitations on thermal effluent involved in discharges by Dominion Nuclear North Anna, LLC, from its reactors at its North Anna Power Station.

Background

You state that Dominion Nuclear North Anna, LLC ("Dominion"), operates two nuclear reactors at its North Anna Power Station ("NAPS"). Further, NAPS disposes waste heat by running water from the North Anna Reservoir through condensers. The heated water is then discharged to a series of three connected cooling lagoons, separated from the main body of the lake by dikes. You relate that the lagoons are owned and operated by Dominion and collectively are referred to as the Waste Heat Treatment Facility ("WHTF"). WHTF discharges to the North Anna Reservoir through a dike owned and operated by Dominion. Together, the Reservoir and the lagoons make up Lake Anna. You state that WHTF was designed, built, and permitted by the State Water Control Board to be used as a treatment facility for waste heat. Dominion considers WHTF to be an integral part of the power station. Because WHTF specifically was designed as a waste treatment system, you indicate that the Board has not imposed restrictions on the discharge of heat from NAPS into WHTF.

Applicable Law and Discussion

The Virginia Pollutant Discharge Elimination System ("VPDES") program[1] is administered by the State Water Control Board[2] under the State Water Control Law[3] pursuant to approval by the federal Environmental Protection Agency ("EPA").[4] The VPDES program regulates the discharge of pollutants, including waste heat, into "surface waters" from point sources such as those about which you inquire. The Board has adopted regulations to implement this program.[5]

The key to answering the question you raise is found in 9 VAC 25-31-10 of the VPDES program. In defining "surface waters" for the purpose of establishing the jurisdiction of this program, the Board provides that:

> *"Surface waters"* means:
>
> ....
>
> 7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in subdivisions 1 through 6 of this definition.
>
> *Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the C*[lean] *W*[ater] *A*[ct] *and the law, are not surface waters.*[6]

Based on this clear regulatory language, you indicate that the Board historically has rejected jurisdiction over such matters and has declined to regulate WHTF under the VPDES program.[7] Additionally, the Board has not imposed conditions on the discharge of waste heat into WHTF from NAPS.[8]

---

[1] *See* 9 Va. Admin. Code §§ 25-31-10 to 25-31-940 (2004 & Supp. 2006).

[2] *See* VA. CODE ANN. tit. 62.1, ch. 3.2, §§ 62.1-44.36 to 62.1-44.44 (2006) (setting forth statutory scheme governing conservation of water resources and State Water Control Board).

[3] *See* tit. 62.1, ch. 3, §§ 62.1-44.2 to 62.1-44.34:28 (2006) ("State Water Control Law").

[4] The federal Clean Water Act establishes a permit requirement for discharges of pollutants into waters of the United States. *See* 33 U.S.C.S. §§ 1342 to 1345 (LexisNexis 2001); 40 C.F.R. pt. 123 (2006). The EPA Administrator approved the State Water Control Board's program on March 31, 1975. *See* Environmental Protection Agency, NPDES Permit Program Results for Virginia, http://cfpub.epa.gov/npdes/stateinfo.cfm?&view=state&state_id=47&state=VA (last visited Nov. 1, 2006); *see also* 40 Fed. Reg. 20,129 (May 8, 1975).

[5] *See supra* note 1.

[6] 9 VA. ADMIN. CODE § 25-31-10 (Supp. 2006) (emphasis added). The State Water Control Board has the authority under state law to define "state waters" and "surface waters" and its VPDES regulations were lawfully adopted. 1999 Op. Va. Att'y Gen. 179, 180-81.. The comparable federal regulation, 40 C.F.R. § 122.2, which defines "waters of the United States" in subpart g thereof, also contains an exemption for waste treatment systems. That regulation, however, specifically excludes "cooling ponds" from the definition of such systems. The regulations of the State Water Control Board were approved by EPA and contain no such exclusion. *See supra* note 4 and accompanying text.

[7] *See infra* note 8.

[8] You indicate that the State Water Control Board has imposed permit conditions on discharges of heated water into the North Anna Reservoir from WHTF. This is consistent with the Board's treatment of the Reservoir as a surface water under VPDES regulations.

While the language of 9 VAC 25-31-10 would not appear to require interpretation, an agency's interpretation and enforcement of its regulations is entitled to great deference.[9] Courts will not overturn an agency's interpretation of its regulations unless it is found to be arbitrary and capricious.[10] Conversely, an agency that ignores both the plain language and its prior consistent application of a regulation risks a successful challenge to any effort to change such application.[11]

Conclusion

Accordingly, it is my opinion that the State Water Control Board does not have the legal authorization to impose limitations on thermal effluent involved in discharges by Dominion Nuclear North Anna, LLC, from its reactors at its North Anna Power Station.

Thank you for letting me be of service to you.

Sincerely,

Robert F. McDonnell

3:73; 1:941/06-096

[9] Holtzman Oil Corp. v. Commonwealth, 32 Va. App. 532, 539, 529 S.E.2d 333, 337 (2000); Hilliards v. Jackson, 28 Va. App. 475, 479-80, 506 S.E.2d 547, 550 (1998); Va. Real Estate Bd. v. Clay, 9 Va. App. 152, 160, 384 S.E.2d 622, 627 (1989).

[10] Johnston-Willis, Ltd. v. Kenley, 6 Va. App. 231, 246, 369 S.E.2d 1, 9 (1988), *quoted in* Fralin v. Kozlowski, 18 Va. App. 697, 701, 447 S.E.2d 238, 240 (1994).

[11] Any such challenge would, of course, be brought under Virginia's Administrative Process Act. *See* §§ 2.2-4000 to 2.2-4031 (2005 & Supp. 2006). Under § 2.2-4027 of the Act, a party challenging a decision of the State Water Control Board would need to show, *inter alia*, "compliance with ... jurisdiction limitations" and "the substantiality of the evidentiary support for findings of fact." Based on the facts you provide and 9 VAC 25-31-10, any effort by the Board to regulate the situation you describe may not withstand judicial scrutiny.

Present: Kinser, C.J., Lemons, and Millette, JJ., and Carrico, Russell, Lacy, and Koontz, S.JJ.

BLUE RIDGE ENVIRONMENTAL DEFENSE LEAGUE, INC., ET AL.

v. Record No. 101476

PER CURIAM
January 13, 2012

COMMONWEALTH OF VIRGINIA, EX REL. VIRGINIA STATE WATER CONTROL BOARD, ET AL.

FROM THE COURT OF APPEALS OF VIRGINIA

We granted the petition for appeal in this case to determine whether the Court of Appeals erred in reversing a circuit court's judgment and applying the arbitrary and capricious standard of review to the State Water Control Board's (Board) decision to reissue a Virginia Pollutant Discharge Elimination System permit to Virginia Electric and Power Company for its North Lake Anna Nuclear Power Station (the Station). We also determine whether the Court of Appeals erred in reversing the circuit court and affirming the Board's determination that the discharge of heated water from the Station into a waste heat treatment facility, classified as a "waste treatment facility" under state and federal regulations, does not require a separate discharge permit.

We have considered all the issues raised in the assignments of error and for the reasons stated in the opinion of the Court of Appeals in Commonwealth v. Blue Ridge Environmental Defense

League, Inc., 56 Va. App. 469, 694 S.E.2d 290 (2010), we will affirm its judgment.

Affirmed.

Approximate Location of Temperature Recorders

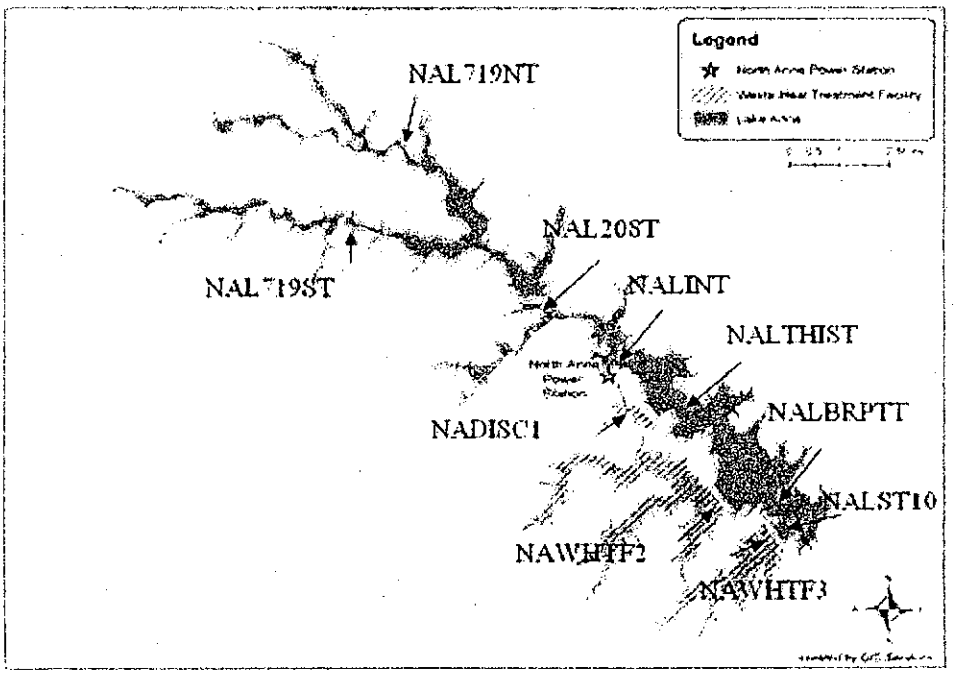


TABLE 3.1-1 SUMMARY OF NORTH ANNA FIXED RECORDER TEMPERATURE DATA DURING 2008. ALL RESULTS ARE CALCULATED FROM HOURLY TEMPERATURES (IN DEGREES CELSIUS). ALL ARE SURFACE INTRUMENTS EXCEPT FOR NALST10 WHICH IS AT MID-DEPTH. A "*" INDICATES DATA MISSING DUE TO INSTRUMENT MALFUNCTION OR DAMAGE.

YEAR=2008 MONTH=JANUARY

STATISTIC/ STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	7.6	7.7	9.3	10	10.7	12.5	12.7	23	19	15.6	11.7
HOURLY MEAN	5.5	5.7	7.3	8.2	8.6	10.3	11.2	21	15.6	12.8	9
HOURLY LOW	3.5	4	5.4	6.6	7.2	8.8	9.4	17.1	12.3	10.4	6
HOURS	743	744	744	744	744	744	744	744	744	744	743

YEAR=2008 MONTH=FEBRUARY

STATISTIC/ STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	8.4	8.2	9.7	10	10.7	11.8	12.1	22.3	18	14.2	12.3
HOURLY MEAN	6.4	6.4	7.5	8.2	8.8	10.3	11.2	19.6	15.1	12.9	10
HOURLY LOW	4.4	4.3	5.4	6.7	7.4	8.9	10.2	14.6	13.3	11.3	8.1
HOURS	696	696	696	696	696	696	696	696	696	696	696

YEAR=2008 MONTH=MARCH

STATISTIC/ STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	13	13	12.9	13.3	13.7	15.4	15.7	26	21.5	18.4	16.2
HOURLY MEAN	10.4	10.4	10.6	11.1	11.6	13	13.7	23.9	18.8	16.2	12.9
HOURLY LOW	6.1	6.1	6.5	7.7	8	9.7	10.9	20.4	14.5	12.3	9.3
HOURS	744	744	744	744	744	744	744	744	744	744	744

YEAR=2008 MONTH=APRIL

STATISTIC/ STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	22.4	*	21.5	21.2	21.1	21.3	20.2	29.1	27.4	25.1	21.7
HOURLY MEAN	16.1	*	16.3	16.5	16.7	17.3	17.7	26.7	22.8	20.8	17
HOURLY LOW	11.4	*	12.2	12.5	13	14.3	15	23.9	19.3	17.4	13.4
HOURS	718	0	718	718	719	718	718	718	718	719	717

TABLE 3.1-1 (CONT.)

YEAR=2008 MONTH=MAY

STATISTIC/ STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	25.5	*	24.7	24.1	24.8	24.5	23.8	31.6	29.4	27.5	25.5
HOURLY MEAN	20.7	*	20.8	20.7	21	21.6	21.7	29.2	26.3	24.7	21.4
HOURLY LOW	16.8	*	18.3	18.3	18.5	19.3	19.2	27.2	23.3	22.4	18.7
HOURS	744	0	744	744	744	744	744	744	744	744	744

YEAR=2008 MONTH=JUNE

STATISTIC/ STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	32.3	*	32.5	31.5	31.5	30.7	29.6	36.9	35.1	33.8	30.7
HOURLY MEAN	28.3	*	28.2	28	28.1	27.9	27.4	35	32.7	31.2	27.6
HOURLY LOW	24.4	*	24	23.9	24.2	23.6	23.4	31.4	28.8	27	23.4
HOURS	720	0	720	720	720	720	720	720	720	720	720

YEAR=2008 MONTH=JULY

STATISTIC/ STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	32.3	*	32.3	32.4	32.2	32.4	31.7	38.9	36.9	35.3	33
HOURLY MEAN	29.6	*	29.7	29.6	29.8	30.1	30.1	37.2	34.4	32.9	29.7
HOURLY LOW	27.6	*	27.8	27.9	28	28.6	28.8	35.9	32.5	30.8	27.6
HOURS	744	0	744	744	744	744	744	744	744	744	744

YEAR=2008 MONTH=AUGUST

STATISTIC/ STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	31	*	31.4	31.9	31.6	32.3	31.8	38.5	36.3	34.4	32.3
HOURLY MEAN	28.4	*	28.8	29	29.3	30	30.4	36.8	33.6	32.2	29.1
HOURLY LOW	25.7	*	26.5	26.9	26.6	28.1	28.6	34.8	23.4	29.6	26.8
HOURS	744	0	744	744	744	744	744	744	744	744	744

YEAR=2008 MONTH=SEPTEMBER

STATISTIC/ STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	29.1	*	29.6	30	29.6	30.3	29.8	36.4	34.3	32.4	30.6
HOURLY MEAN	25.6	*	26.2	26.3	26.6	27.1	27.4	33.9	30.2	28.8	26.6
HOURLY LOW	22.1	*	23.1	23.3	23.3	23.8	23.9	31.2	26	24	23.4
HOURS	720	0	720	720	719	720	720	719	720	720	720

TABLE 3.1-1 (CONT.)

YEAR=2008 MONTH=OCTOBER

STATISTIC/ STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISCT 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	23.1	22.9	23.6	23.6	24	24.3	24.6	31.3	27.9	25.7	24.8
HOURLY MEAN	19.5	19.5	20.5	20.8	21	21.5	22	26.8	23.9	22.6	20.9
HOURLY LOW	13.8	14.1	15.6	16.3	16.5	17.1	17.7	21.8	19.1	18	15.5
HOURS	744	744	744	744	744	744	744	744	744	744	744

YEAR=2008 MONTH=NOVEMBER

STATISTIC/ STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISCT 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	15.9	15.8	16.7	16.9	17.4	17.9	18.2	24.8	21	19.2	18.6
HOURLY MEAN	12.1	12.2	13.5	14.1	14.3	15.4	16	22.7	18.5	16.7	14.6
HOURLY LOW	7.7	7.9	9.5	10.3	10.6	12.1	12.8	20.5	16.4	14	10.9
HOURS	718	719	719	718	719	720	719	718	718	720	718

YEAR=2008 MONTH=DECEMBER

STATISTIC/ STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISCT 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	7.9	7.9	9.8	10.5	10.9	12.3	13.2	24	19.5	15.2	12.4
HOURLY MEAN	6.4	6.6	8.3	9.1	9.5	11.2	12	22.3	16.7	13.8	10.9
HOURLY LOW	5.1	5.3	6.9	7.9	8.2	9.7	11	21	14.1	12.4	9
HOURS	744	744	744	744	744	744	744	744	744	744	744

TABLE 3.1 SUMMARY OF NORTH ANNA FIXED RECORDER TEMPERATURE DATA DURING 2009. ALL RESULTS ARE CALCULATED FROM HOURLY TEMPERATURES (IN DEGREES CELCIUS). ALL ARE SURFACE INSTRUMENTS EXCEPT FOR NALST10 WHICH IS AT 3 METERS DEPTH. A * INDICATES DATA MISSING DUE TO INSTRUMENT MALFUNCTION OR DAMAGE.

YEAR=2009 MONTH=JANUARY

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISCT 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	6.1	6	7.8	8.6	9.3	10.9	11.8	21.7	16.6	13.6	10.8
HOURLY MEAN	4.5	4.3	5.3	6.6	7.1	9	10	19.7	14.2	11.5	8.8
HOURLY LOW	3.1	3	2.7	4.9	5.6	7.4	8.1	17.9	11.8	9.3	6.7
HOURS	744	744	744	744	744	744	744	744	744	744	744

YEAR=2009 MONTH=FEBRUARY

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	7.6	7.2	7.8	8.5	9	11.1	11.8	21.5	17	14.2	11.5
HOURLY MEAN	5.7	5.5	5.4	6.7	7.3	9.2	10.4	19.8	14.7	12	9.4
HOURLY LOW	3.7	3.2	2.7	4.6	5.5	7.4	8.6	17.8	11.8	10.2	7.3
HOURS	672	672	672	672	672	672	672	672	672	672	672

YEAR=2009 MONTH=MARCH

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	12.9	13.2	12.6	11.8	12.4	13.1	13.1	24.8	18.9	16.5	14.5
HOURLY MEAN	9.1	9.1	9.3	9.6	10	10.9	11.4	22.1	16.1	13.7	11.1
HOURLY LOW	5.2	4.9	5.3	6.5	7	8.1	9.4	16.2	12.8	10.7	7.5
HOURS	744	744	744	744	744	744	744	744	744	744	744

YEAR=2009 MONTH=APRIL

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	22.1	22.7	21.1	20.6	20.7	20.3	19.9	29.1	26.2	24.1	22.5
HOURLY MEAN	14.9	15	14.5	14.6	15	15.7	16.1	24.8	21	19.1	16
HOURLY LOW	12.1	11.7	11.3	11	11.7	12.1	12.5	18	16.3	15.8	12.4
HOURS	718	719	718	718	718	718	718	718	718	718	718

TABLE 3.1-1 (CONT.)

YEAR=2009 MONTH=MAY

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	26.3	26.7	26	25.9	25.8	25.8	25.3	32.7	31.3	29.4	26.8
HOURLY MEAN	21.9	22	21.6	21.4	21.6	21.9	21.7	30.2	27.2	25.5	21.8
HOURLY LOW	18.5	18.6	18.5	18.6	18.6	19.1	18.5	27.8	23.9	22.8	17.9
HOURS	744	744	744	744	744	744	744	744	744	744	744

YEAR=2009 MONTH=JUNE

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	29.6	29.8	29.7	29.1	29.4	29.6	29.3	36.3	34.4	32.5	30.4
HOURLY MEAN	27	27	26.8	26.7	26.8	27	26.8	34.2	31.5	30.2	26.6
HOURLY LOW	23.8	23.3	24	24.1	24	24.7	24.4	31.9	28.6	27.4	23.7
HOURS	720	720	720	720	720	720	720	720	720	720	720

YEAR=2009 MONTH=JULY

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	30.2	30.8	30.6	30.2	30.7	30.7	30.5	37.6	36.1	33.6	31.8
HOURLY MEAN	28.4	28.5	28.6	28.6	28.8	29.2	29.3	36.3	33.5	32	28.6
HOURLY LOW	26.6	26.8	27	27.2	27.4	28	28.3	35.2	31.9	30.6	25.8
HOURS	744	743	744	744	744	744	744	744	744	744	744

YEAR=2009 MONTH=AUGUST

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	31.3	31.7	31.6	31.6	31.5	32.2	31.6	38.6	36.6	34.7	32.5
HOURLY MEAN	29.6	29.9	30	29.9	30.2	30.6	30.9	37.7	34.8	33.3	30.2
HOURLY LOW	28.1	28.4	28.8	29	29.1	29.8	29.9	37	33	32	28.1
HOURS	744	744	744	744	744	744	744	744	744	744	744

YEAR=2009 MONTH=SEPTEMBER

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	28.2	28.4	28.8	29	29.1	30.1	30.6	36.9	33.9	32.1	30.2
HOURLY MEAN	25.5	25.5	26.3	26.5	26.7	27.7	28.2	34.4	31.1	29.6	26.8
HOURLY LOW	22.4	22.6	23.5	23.9	23.9	25.3	26.1	31.8	28.5	26.8	23.4
HOURS	720	720	720	720	720	720	720	720	720	720	720

TABLE 3.1-1 (CONT.)

YEAR=2009 MONTH=OCTOBER

STATISTIC / STATION	NAL19ST 6	NAL19NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 13	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	22.6	23.3	24	24.4	24.5	26	26.2	31.9	29.5	27.4	25.7
HOURLY MEAN	18.9	19	20.2	20.7	20.9	22	22.6	28.7	25.4	23.7	21
HOURLY LOW	15.3	15.6	17.2	17.9	18.2	19.1	19.4	23.6	21.2	20.2	17.2
HOURS	743	743	743	743	743	743	742	743	742	743	743

YEAR=2009 MONTH=NOVEMBER

STATISTIC / STATION	NAL19ST 6	NAL19NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 13	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	17	16.9	18.2	18.5	18.8	19.4	19.9	27.8	24.2	21.6	19.5
HOURLY MEAN	13.7	13.6	15.4	15.9	16.3	17.5	18.1	25.3	21.4	19.6	16.9
HOURLY LOW	11.2	11.2	12.8	13.6	14	15.3	16.3	23	18.8	17.4	14.4
HOURS	720	720	720	720	720	720	720	720	720	720	720

YEAR=2009 MONTH=DECEMBER

STATISTIC / STATION	NAL19ST 6	NAL19NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 13	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	11.4	11.5	13.2	13.7	14.2	15.7	16.4	23.9	20.4	17.8	15.6
HOURLY MEAN	6	6.2	8.7	9.9	10.3	12	12.9	21.5	16.3	14	11.8
HOURLY LOW	2.4	2.4	4.8	6.2	7	8.8	10.1	17	13.2	11.3	7.9
HOURS	744	744	744	744	744	744	744	744	744	744	744

TABLE 3.1-1 SUMMARY OF NORTH ANNA FIXED RECORDER TEMPERATURE DATA DURING 2010. ALL RESULTS ARE CALCULATED FROM HOURLY TEMPERATURES (IN DEGREES CELCIUS). ALL ARE SURFACE INSTRUMENTS EXCEPT FOR NALST10 WHICH IS AT 3 METERS DEPTH. A * INDICATES DATA MISSING DUE TO INSTRUMENT MALFUNCTION OR DAMAGE.

YEAR=2010 MONTH=JANUARY

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208ST 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	6.5	5.6	6.4	7.2	7.7	9.8	11.0	20.4	16.3	13.0	10.0
HOURLY MEAN	3.7	3.7	3.8	5.8	6.4	8.4	9.5	19.1	13.6	11.2	8.4
HOURLY LOW	1.6	1.8	1.9	3.8	5.1	7.0	8.1	17.4	11.7	9.5	6.5
HOURS	744	744	744	744	744	744	744	744	744	744	744

YEAR=2010 MONTH=FEBRUARY

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208ST 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	5.7	5.8	4.8	6.2	7.7	9.5	10.4	19.4	14.8	12.9	9.7
HOURLY MEAN	4.0	4.1	3.8	5.3	5.8	8.1	9.4	18.5	12.9	11.0	8.3
HOURLY LOW	2.7	2.6	2.7	4.5	4.8	6.7	8.0	17.9	10.1	9.7	6.6
HOURS	672	672	672	672	672	672	672	672	672	672	672

YEAR=2010 MONTH=MARCH

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208ST 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	14.8	14.6	14.6	14.4	14.6	15.5	14.8	25.3	21.8	19.7	14.7
HOURLY MEAN	9.9	9.9	9.8	10.2	10.6	11.8	12.2	22.1	17.0	15.3	11.6
HOURLY LOW	4.6	5.0	4.5	5.1	6.1	8.4	9.6	18.5	12.6	11.4	8.8
HOURS	744	744	744	744	744	744	744	744	744	744	744

YEAR=2010 MONTH=APRIL

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208ST 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	21.3	21.7	20.4	19.3	19.9	19.4	19.5	28.2	24.3	22.9	19.8
HOURLY MEAN	18.3	18.7	18.1	17.3	17.7	17.5	17.2	25.3	21.9	20.6	17.3
HOURLY LOW	12.7	13.1	12.8	12.3	12.3	13.3	13.4	22.8	18.0	16.7	12.9
HOURS	720	720	720	718	718	719	720	719	719	719	719

YEAR=2010 MONTH=MAY

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208ST 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	27.5	27.6	27.3	26.6	27.1	26.6	25.5	32.0	30.4	29.6	27.2
HOURLY MEAN	22.6	22.9	22.5	21.8	22.5	22.5	22.1	29.6	27.2	25.8	21.0
HOURLY LOW	19.5	19.8	19.4	18.3	19.3	18.5	18.0	26.7	23.4	21.6	10.0
HOURS	744	744	744	744	744	744	744	744	744	744	744

YEAR=2010 MONTH=JUNE

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208ST 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	31.7	32.0	31.5	31.4	31.8	31.8	31.2	38.5	36.3	34.5	32.3
HOURLY MEAN	29.0	29.4	29.0	28.2	28.8	28.5	28.0	35.2	32.7	31.4	28.4
HOURLY LOW	25.3	26.8	26.4	25.4	25.7	25.1	24.5	30.0	28.5	28.0	25.1
HOURS	720	720	720	720	720	720	720	720	720	720	720

TABLE 3.1-1 (CONT.)

YEAR=2010 MONTH=JULY

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 7	NALTHST 1	NALBRPTT 3	NALST10 10	NADSCH 7	NAWHTF2 8	NAWHTF3 9	NARIV60T 11
HOURLY HIGH	31.9	32.7	32.4	32.1	32.8	32.7	32.4	39.5	37.2	35.4	33.5
HOURLY MEAN	30.1	30.7	30.7	30.1	30.9	31.1	31.0	37.7	35.0	33.6	30.4
HOURLY LOW	27.9	28.3	28.6	28.1	28.8	29.3	29.3	34.5	32.8	31.8	26.7
HOURS	744	744	744	744	744	744	744	744	744	744	744

YEAR=2010 MONTH=AUGUST

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 7	NALTHST 1	NALBRPTT 3	NALST10 10	NADSCH 7	NAWHTF2 8	NAWHTF3 9	NARIV60T 11
HOURLY HIGH	31.4	32.2	32.3	31.9	33.0	32.1	32.2	39.4	36.9	35.6	32.8
HOURLY MEAN	29.3	29.6	30.0	29.6	30.4	30.9	31.2	36.2	34.8	33.2	30.1
HOURLY LOW	28.1	27.8	28.5	28.7	28.9	30.0	30.4	23.2	29.0	31.9	28.3
HOURS	744	744	744	744	744	744	744	744	744	744	744

YEAR=2010 MONTH=SEPTEMBER

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 7	NALTHST 1	NALBRPTT 3	NALST10 10	NADSCH 7	NAWHTF2 8	NAWHTF3 9	NARIV60T 11
HOURLY HIGH	31.2	30.6	31.5	31.1	31.6	31.5	31.6	38.3	36.5	34.5	32.5
HOURLY MEAN	26.7	26.6	27.2	27.2	27.5	28.1	28.5	32.4	31.2	29.7	27.4
HOURLY LOW	23.7	23.8	24.3	24.5	24.6	25.3	25.7	24.5	27.0	26.0	23.4
HOURS	720	720	720	720	720	720	720	720	720	720	720

YEAR=2010 MONTH=OCTOBER

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 7	NALTHST 1	NALBRPTT 3	NALST10 10	NADSCH 7	NAWHTF2 8	NAWHTF3 9	NARIV60T 11
HOURLY HIGH	23.7	23.7	24.4	25.0	24.7	25.2	25.6	25.9	26.9	26.0	24.5
HOURLY MEAN	19.9	19.8	20.5	20.7	20.8	21.0	21.0	22.3	22.0	21.3	20.2
HOURLY LOW	16.9	17.0	17.7	17.9	18.0	18.6	18.9	18.9	19.6	19.0	17.0
HOURS	744	744	744	744	744	744	744	744	744	744	744

YEAR=2010 MONTH=NOVEMBER

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 7	NALTHST 1	NALBRPTT 3	NALST10 10	NADSCH 7	NAWHTF2 8	NAWHTF3 9	NARIV60T 11
HOURLY HIGH	17.1	17.0	17.7	18.0	18.0	19.1	19.4	26.3	21.8	19.9	18.3
HOURLY MEAN	13.3	13.3	14.8	15.3	15.7	17.0	17.7	22.1	20.6	18.8	15.9
HOURLY LOW	10.5	10.7	12.6	13.2	13.7	15.0	16.1	16.1	18.8	17.4	13.1
HOURS	720	720	720	720	720	720	720	720	720	720	720

YEAR=2010 MONTH=DECEMBER

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 7	NALTHST 1	NALBRPTT 3	NALST10 10	NADSCH 7	NAWHTF2 8	NAWHTF3 9	NARIV60T 11
HOURLY HIGH	11.6	11.7	13.4	13.9	14.3	15.6	16.5	25.0	20.4	17.8	15.8
HOURLY MEAN	5.6	5.7	7.4	8.7	9.2	10.9	12.0	17.1	15.1	13.0	9.8
HOURLY LOW	3.1	2.7	3.8	5.6	6.2	7.8	9.2	9.2	11.6	10.2	6.8
HOURS	744	744	744	744	744	744	744	744	744	744	744

TABLE 3.1-1 SUMMARY OF NORTH ANNA FIXED RECORDER TEMPERATURE DATA DURING 2011. ALL RESULTS ARE CALCULATED FROM HOURLY TEMPERATURES (IN DEGREES CELCIUS). ALL ARE SURFACE INSTRUMENTS EXCEPT FOR NALST10 WHICH IS AT 3 METERS DEPTH. A * INDICATES DATA MISSING DUE TO INSTRUMENT MALFUNCTION OR DAMAGE.

YEAR=2011 MONTH=JANUARY

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTP2 8	NAWHTP3 9	NARIV601 11
HOURLY HIGH	4.4	4.0	6.5	7.5	8.0	9.9	10.9	19.0	15.2	12.9	9.9
HOURLY MEAN	3.3	3.2	3.6	5.5	6.0	8.0	9.3	17.4	13.1	10.7	7.5
HOURLY LOW	2.1	1.7	1.8	4.3	5.1	6.7	8.1	9.7	11.3	9.4	5.7
HOURS	744	744	744	744	744	744	744	744	744	744	744

YEAR=2011 MONTH=FEBRUARY

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTP2 8	NAWHTP3 9	NARIV601 11
HOURLY HIGH	8.4	8.3	9.0	9.6	10.2	11.4	12.4	22.5	18.4	14.7	12.4
HOURLY MEAN	5.4	5.2	5.3	6.7	7.3	9.3	10.6	20.0	15.0	12.3	9.3
HOURLY LOW	3.5	3.6	2.9	5.0	5.9	7.4	8.8	18.4	12.7	11.0	7.0
HOURS	672	672	672	672	672	672	672	672	672	672	672

YEAR=2011 MONTH=MARCH

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTP2 8	NAWHTP3 9	NARIV601 11
HOURLY HIGH	14.1	13.7	13.8	14.1	14.4	14.9	15.4	26.8	22.1	19.3	15.5
HOURLY MEAN	10.3	10.0	10.4	11.0	11.5	12.7	13.4	24.0	18.6	16.2	12.6
HOURLY LOW	7.6	7.4	7.5	8.6	9.0	10.6	11.9	21.7	15.5	13.9	9.9
HOURS	744	744	744	744	744	744	744	744	744	744	744

YEAR=2011 MONTH=APRIL

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTP2 8	NAWHTP3 9	NARIV601 11
HOURLY HIGH	22.8	21.8	21.2	20.9	20.8	21.7	21.4	29.8	27.3	25.4	22.1
HOURLY MEAN	15.7	15.7	15.4	15.6	15.8	16.5	16.9	27.3	22.8	20.4	16.8
HOURLY LOW	10.2	10.2	10.6	11.2	11.4	12.7	13.8	24.8	18.0	16.0	12.8
HOURS	719	719	719	719	719	719	719	719	719	719	719

YEAR=2011 MONTH=MAY

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTP2 8	NAWHTP3 9	NARIV601 11
HOURLY HIGH	29.1	29.5	29.4	29.5	29.3	29.0	27.4	35.0	33.4	32.5	30.0
HOURLY MEAN	23.0	23.0	22.7	22.6	22.8	23.0	23.1	30.7	28.0	26.6	23.0
HOURLY LOW	19.8	20.1	19.6	19.5	19.7	20.2	20.5	28.3	25.1	23.7	18.7
HOURS	744	744	744	744	744	744	744	744	744	744	744

YEAR=2011 MONTH=JUNE

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTP2 8	NAWHTP3 9	NARIV601 11
HOURLY HIGH	31.0	31.5	31.5	31.6	30.8	30.8	30.4	37.3	35.7	34.1	31.8
HOURLY MEAN	28.5	28.5	28.5	28.5	28.5	28.7	28.7	35.9	33.1	31.8	28.4
HOURLY LOW	27.0	27.0	26.9	27.0	26.9	27.2	26.9	34.7	31.2	30.4	25.0
HOURS	720	720	720	720	720	720	720	720	720	720	720

TABLE 3.1-1 (CONT.)

YEAR=2011 MONTH=JULY

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	33.9	34.1	33.8	33.9	33.8	33.8	33.3	40.6	38.6	36.9	34.5
HOURLY MEAN	31.1	31.1	31.2	31.1	31.2	31.3	31.5	38.7	35.8	34.4	30.9
HOURLY LOW	28.7	28.6	28.9	29.1	29.1	29.5	29.9	36.8	33.4	32.5	27.8
HOURS	744	744	744	744	744	744	744	744	744	744	744

YEAR=2011 MONTH=AUGUST

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	33.3	33.5	33.3	33.6	33.5	33.4	33.4	40.5	38.3	36.5	33.8
HOURLY MEAN	29.7	29.7	29.9	30.1	30.2	30.8	32.1	36.8	34.0	32.8	29.9
HOURLY LOW	26.8	26.5	27.1	27.3	27.4	27.5	30.9	28.5	28.4	27.8	26.1
HOURS	744	744	744	744	744	744	541	744	744	744	744

YEAR=2011 MONTH=SEPTEMBER

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	28.3	28.3	28.3	28.1	28.4	28.2	*	29.6	29.4	29.3	28.4
HOURLY MEAN	25.4	25.2	25.5	25.5	25.6	25.6	*	25.7	25.9	25.8	25.1
HOURLY LOW	23.4	23.1	23.6	23.6	23.7	23.7	*	23.6	23.6	23.3	22.5
HOURS	720	720	720	720	720	720	*	720	720	720	720

YEAR=2011 MONTH=OCTOBER

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	23.7	23.7	23.6	23.7	23.7	23.7	*	23.7	24.0	23.8	23.5
HOURLY MEAN	19.5	19.5	19.9	20.1	20.9	20.2	*	20.1	20.1	19.9	19.5
HOURLY LOW	14.7	14.9	16.0	16.2	16.2	16.1	*	16.3	16.1	15.6	15.3
HOURS	744	744	744	744	534	744	*	744	744	744	744

YEAR=2011 MONTH=NOVEMBER

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	15.4	15.8	16.5	16.5	16.4	16.4	*	25.7	20.4	17.5	15.9
HOURLY MEAN	13.0	12.9	13.8	14.1	14.0	14.3	*	18.5	16.0	14.9	14.0
HOURLY LOW	11.2	11.1	12.1	12.7	12.6	12.9	*	13.9	13.6	13.3	12.4
HOURS	720	720	720	720	720	720	*	720	720	720	720

YEAR=2011 MONTH=DECEMBER

STATISTIC / STATION	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
HOURLY HIGH	12.2	11.9	12.6	13.5	13.5	14.6	*	25.7	20.9	17.4	14.7
HOURLY MEAN	9.0	9.6	10.7	11.7	11.6	13.3	*	23.9	18.5	16.0	13.1
HOURLY LOW	6.7	7.2	9.1	10.6	10.3	11.8	*	22.5	16.8	14.7	11.8
HOURS	744	744	743	467	744	743	*	744	744	744	742

COMMONWEALTH of VIRGINIA

Douglas W. Domenech
Secretary of Natural Resources

Department of Game and Inland Fisheries

Robert W. Duncan
Executive Director

February 7, 2013

Susan Mackert
Water Permit Writer
Virginia Department of Environmental Quality
Northern Regional Office
13901 Crown Court
Woodbridge, VA 22193

RE: Dominion NAPS
316(a) variance
ESSLog # 20374

Dear Ms. Mackert:

We are writing in response to your request for input regarding Dominion Virginia Power's request for continuance of the 316(a) temperature variance for waters associated with the North Anna Power Station (NAPS). Based on our most current data regarding the fisheries in Lake Anna, we are comfortable with the continuance of the 316(a) temperature variance for the facility.

Thank you for the opportunity to provide input on Dominion's request. Please contact me or Amy Ewing at 804-367-0909 if we may be of further assistance.

Sincerely,

Raymond T. Fernald, Manager
Environmental Programs

RTF/AME

Cc: Paul Bugas, VDGIF

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated industrial wastewater (cooling water), treated wastewater, and storm water into a water body in Louisa, Virginia.

PUBLIC COMMENT PERIOD: February 7, 2014 to March 10, 2014

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Industrial issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Virginia Electric and Power Company, 5000 Dominion Boulevard, Glen Allen, VA 23060, VA0052451

NAME AND ADDRESS OF FACILITY: Dominion – North Anna Power Station, 1022 Haley Drive, Mineral, VA 23117

PROJECT DESCRIPTION: Virginia Electric and Power Company has applied for the reissuance of a permit for the discharge of wastewaters from the operation of existing Units 1 and 2 of the private Dominion – North Anna Power Station. The permit does not address or authorize any discharges from additional units.

The applicant proposes to release cooling water at an average rate of 2336 million gallons per day into a water body. This permit also authorizes the discharge of storm water and treated sewage wastewater. Sludge from the wastewater treatment process will be disposed of at either the Louisa Regional Wastewater Treatment Plant or the City of Richmond Wastewater Treatment Plant. The facility proposes to release the cooling water, treated sewage, treated industrial wastewaters, and storm water in Lake Anna in Louisa County in the York River watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH,Total Residual Chlorine, Free Available Chlorine, Total Suspended Solids, Oil and Grease, Total Chromium, Total Zinc, 126 Priority Pollutants, and BOD_5. The permit also contains alternate thermal effluent limitations pursuant to §316(a) of the Clean Water Act in the form of a heat rejection limit. The permit also requires monitoring and reporting for: Temperature, Total Nitrogen, Total Kjeldahl Nitrogen, Nitrate+Nitrite, Total Phosphorus, Influent BOD_5, Influent Total Suspended Solids, and Chronic Toxicity using *C. dubia* and *P. promelas*.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by hand-delivery, e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the documents at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.
Name: Susan Mackert
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3853 E-mail: susan.mackert@deq.virginia.gov Fax: (703) 583-3821